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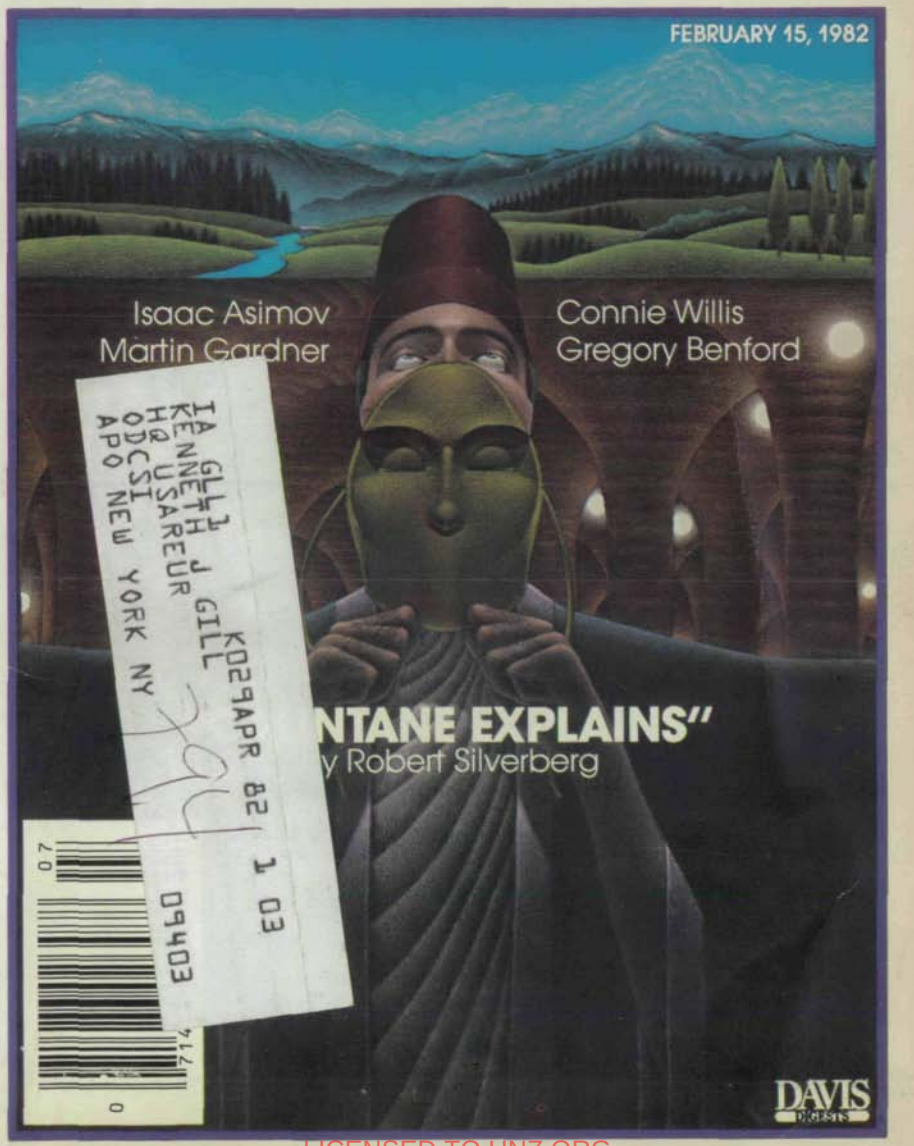

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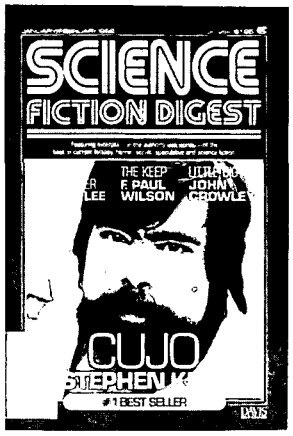

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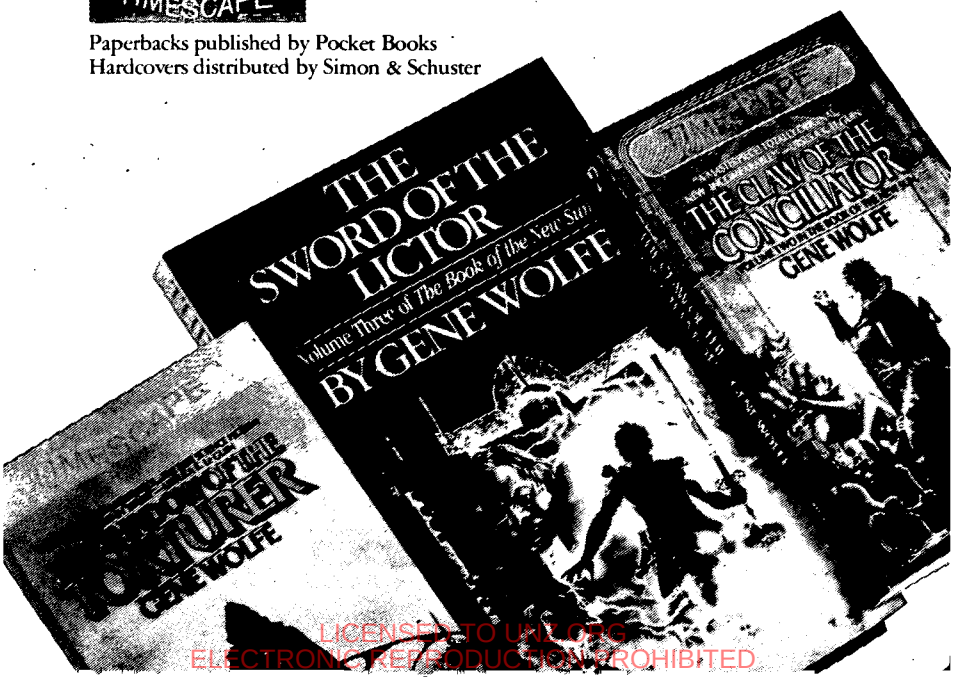

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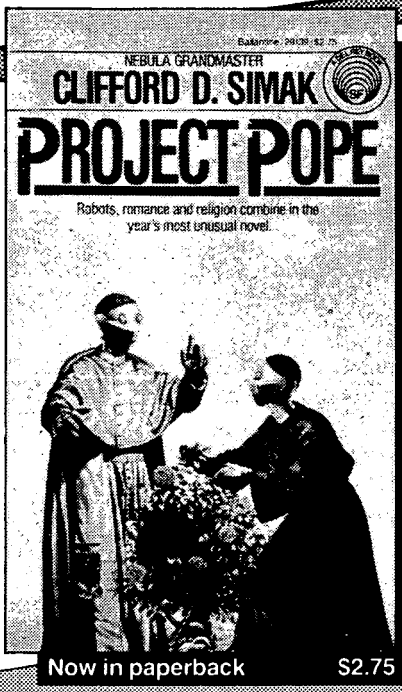

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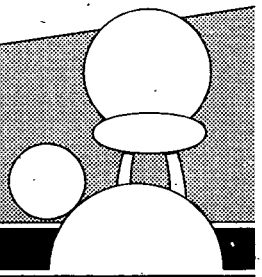

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EDITORIAL: THE UNFORGIVABLE SIN

by Isaac Asimov

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My writings are occasionally controversial, and I am accustomed (though never entirely hardened) to receiving letters of condemnation couched in bitter terms. —But then, what the heck, I sometimes write letters of condemnation myself; and although I like to think I use the rapier rather than the bludgeon, that may not be how it feels to those I condemn.

So I try to be philosophical about it.

There are, however, things that penetrate the philosophic armor, be it ever so well-wrought and finely tempered.

For instance: some time ago, I received a letter from one of my peers—a member of a University faculty—who objected to certain arguments I had advanced, and did so, it would seem, on deeply intellectual grounds. He told me, in his covering letter, that perhaps I had better not indulge in the process of skating on thin ice (logically speaking) since, apparently, my reasoning abilities were not up to the task. To bear out this sad estimate of my intelligence, he offered me a dozen pages or more of his own composition, which he urged me to read.

With a sigh, I set about the task. On the very first page, he struck a shrewd blow by pointing out the harm I did my readers by writing in such a way as to make them believe they understood something when, in actual fact, they did not. Quite gratuitously, he lumped Carl Sagan together with me in this vile criminality. Carl, it appeared, also lured the reader into the miserable illusion of comprehension.

I read on, and it became increasingly clear that the writer was committing what was (for a writer) the unforgivable sin. He was dull and turgid, and his style was simply impenetrable. I don't say

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that if I read with attention and made some shrewd guesses as to what he was trying to say, I might not have gotten some shreds of nutrition out of his essay; but, *please,* my time is reasonably valuable.

I therefore stopped, and composed the following postcard:

"Dear Dr. ———

"Please forgive me but I have no talent whatever as a linguist, and I read only English. Without a translation, I could not manage your letter. Nevertheless, I was able to make out enough to be able to assure you that you will never fall into the Asimov/Sagan trap. No one who reads what you write will ever labor under the belief he understands something."

I admired that card for quite a while, for I felt I had neatly skewered my correspondent. Then, when the card had quite fulfilled its function of making me feel good, I tore it up and dumped it. I wrote no answer at all.

After all, why make him feel bad? Anyone who wrote like that needs no additional punishment.

But why should my friend have written like that? He was undeniably intelligent. He surely knew his subject. Even granted that he had little of that intangible something called "talent," surely he could marshal his arguments logically and choose his words rationally.

Yet he is not alone in his sin. Read any scholarly paper, especially in the "soft" sciences, and you will find copious examples of unforgivably bad writing. (There are numerous exceptions, thank Goodness.) Any one of you readers who has never tried to write a story may well write one that is bad, and yet you would probably not manage to write as badly as many high-IQ scholars do. Why?

In the first place, there are no economic pressures driving scholars to improve. Scholarly journals do not reject papers simply because they are badly written. It is the content that counts, muddy as that content might be. Then, too, such papers have a captive audience, since scholars *must* read papers by other scholars in their own field, however unrewarding the task.

Yet even so, should not a scholar try to write clearly for the sake of clarity itself? Is there no pleasure to be derived from the production of a luminous sentence presenting a thought with gem-like lucidity and precision?

Unfortunately not. I suspect that many a scholar doubts his own intellectual capacity (for reasons which I, not being a psychiatrist, will not puzzle over) and is eager to emphasize that capacity in the only way he knows how. He uses long words, jargon which he invents

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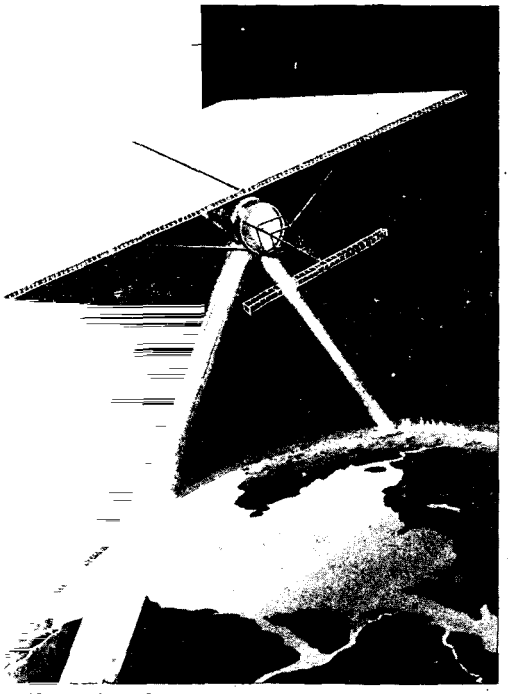

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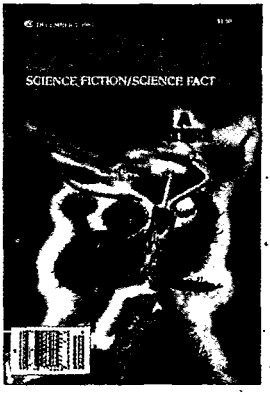

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and others then adopt, spavined sentences from which broken dependent clauses hang limply, and lines of thought which meander helplessly and end nowhere.

The more obscure the writing, the more the writer feels it to be the result of deep analysis rather than shallow thinking; and, since he dares not proclaim that the Emperor has no clothes, he admires the obscurity of others.

Real writers, even real writers in embryo, should not imitate this kind of writing. For instance:

1) Never be obscure unless you wish to be subtle and allusive. Writers might choose words which have poetic or multiple connotations and thus be obscure on the surface, yet present deeper meanings at the price of a little thought. This is a difficult thing to do, and for Goodness' sake, don't try it, unless you have a great deal of talent or experience (or, better, both).

2) Therefore, don't use a long word when a short word will do as well; don't use a foreign word when an English word will do as well; don't use a little-known word when a common word will do as well. Sometimes, the long, the foreign, and the little-known must be used for good and sufficient reasons. For instance, in this particular editorial, I am deliberately using a more extensive vocabulary and a somewhat more convoluted style than I usually do, because I do not want to give the impression that I am touting simplicity out of an inability to handle anything else. The reasons for complexity occur comparatively rarely, however; and if the arcane is inserted on every occasion, it becomes wearisome and ineffective. Play it safe. Be simple.

3) Don't imagine that if a little is good, a lot would be better. If it is sometimes colorful to use an adjective as a noun, or vice versa, don't obscure the difference between the two parts of speech altogether. If hyphenating two words makes possible an economy of expression, don't hyphenate everything in sight. You may, with justice, sprinkle some salt in your soup; but surely you would not add a tablespoonful.

4) Don't overload your sentences. Don't drag them out in the belief that short sentences are childish and long sentences are "literary." Too many short sentences in a row are indeed wearisome, but it takes an admixture of not very many longer sentences to correct that, and the long sentence has to be a live one with a sturdy structure. A mere pasting together of five independent sentences by the omission of periods is repulsive.

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5) Don't pile on the adjectives and adverbs because you feel that is the only way in which you can be "descriptive." The strong words are the nouns and verbs. Make them do all the work possible, and then throw in the modifiers to do whatever little is left over. Unless you are a master, or a successful poet, each modifier you include is a deadly risk.

6) I might as well add a feature of scholarly writing that will rarely tempt you. Scholars are given to the passive voice, saying: "An experiment was performed by the author that ———," instead of saying, in a straightforward manner: "I performed an experiment that ———." The latter is felt to be too aggressive or immodest. The passive seems to imply a greater objectivity. Well, the Devil with that! If the objectivity is there, it will remain there even if you use an "I" in every sentence. If the objectivity is not there, using the passive voice won't put it there. Therefore, write strongly and directly; and never be tempted to write badly just because you think it will make a good impression. The only impression it will really make is that of bad writing.

Oh, well, I am growing passionate, so perhaps I had better draw

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to a close.

Let me tell you what I feel about good writing. It's important to be a good writer if you want to make a living writing, so good writing is important to me for that reason. It's important to be a good writer if you wish to make even an occasional sale: and George, Shawna, and I want as many of you as possible to make at least an occasional sale for the sake of the magazine; and that makes good writing important to all three of us.

But there's more to it than even that. Every one of us reads far more than he will ever write. As you all know, I write (it sometimes seems to me) every waking moment; yet even I read far more than I write. And for all of us, reading good writing is an enormous pleasure, while reading bad writing is a painful job.

What's wrong, then, with wanting to enjoy life?

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The Magazine of Fantasy and Science Fiction, April 1965, facsimile edition, edited by Edward L. Ferman and Martin H. Greenberg, Southern Illinois University Press, $16.95.
Isaac Asimov Presents the Best Science Fiction of the 19th Century, edited by Isaac Asimov, Charles C. Waugh, and Martin Greenberg, Beaufort Books, $15.95.
Creating Short Fiction by Damon Knight, Writer's Digest Books, 1981, $11.95 (reviewed by Darrell Schweitzer).
Infinity and the Mind by Rudy Rucker, Birkhäuser Boston, Inc. 380 Green St. Cambridge MA 02139, $14.50, 320 pp. (reviewed by Martin Gardner).

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If you're among the many people who have just been trapped into spending a fortune because your apartment building went co-op, or are faced with the possibility of that situation, you should read *Oath of Fealty* by the ever-popular team of Niven & Pournelle. Come to think of it, maybe you shouldn't—finding yourself a pioneer in a social wave of the future can be depressing.

A science fiction novel based on the economics of real estate may sound like a crashing bore, but the dynamic duo pull it off, I must say. Of course, the main concern is the social implications, and they are very interesting indeed. *Oath of Fealty* takes place in a near future, as near as later this afternoon, I'd guess, except that Todos Santos has been around long enough for an adolescent generation

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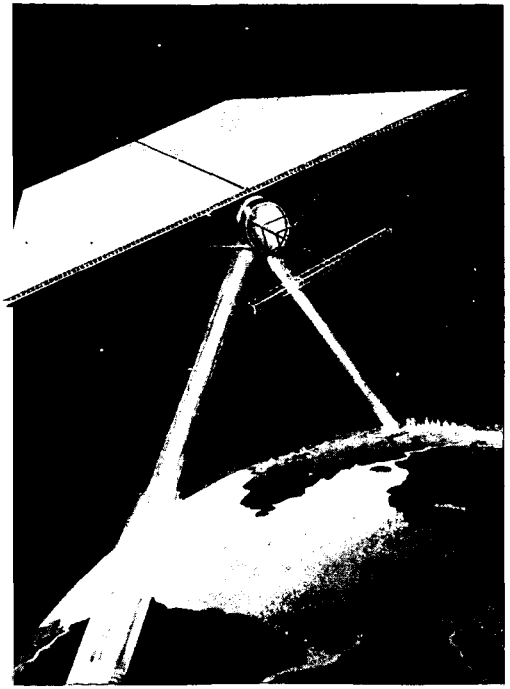

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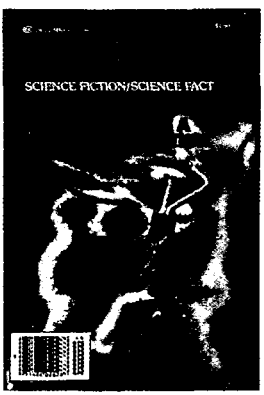

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to grow up within its walls.

Todos Santos is a huge condominium city-within-a-city (and I mean *huge*—two miles to a side, a thousand feet high) built within the city limits of Los Angeles. It has almost everything and is close to self-sufficient. In the years it has existed, it has developed a new society; and it is the clash between that new society and the old one, as represented by the inhabitants of Los Angeles, that the novel is about. The Agelino society is one we're all familiar with, the urban society of today. That of the Saints (as the dwellers in Todos Santos are called) has become nearly feudal in structure (hence the title), though hardly in the quality of life that we associate with the Middle Ages.

The clash between the two is sparked by the death of two Angelino adolescents in Todos Santos and the subsequent arrest of one of its deputy managers. The novel's form is that of a mosaic, more or less following a number of people involved in the crisis through its twists and turns with some dollops of their private lives also, which don't get in the way of the plot, thank God.

Once the reader has sorted out the various people involved, the novel moves along smartly. There are two aspects I particularly liked, one being that the dice aren't loaded on either side. The perils of our contemporary urban society are balanced by the provincial siege mentality that Todos Santos breeds in its inhabitants, a logical corollary to the comparatively luxurious environment it provides. The other is the endless fascination of the complex itself, which Niven and Pournelle have worked out with all the intriguing attention to detail that a Heinlein would lavish on an interstellar vessel. There's also one of the most outrageous jailbreaks I've ever encountered.

This is one of those rare SF works that can be recommended to the non-initiate, to boot. I can't imagine anyone with a concern for today's social trends or simply their own living space who wouldn't find it thought-provoking.

Lord Darcy Investigates is the third book about that ingenious peer, the creation of Randall Garrett; but it is more or less the first for me, since if I have read any of milord's adventures, the memory is lost in the mists of time. So I tackled this one and am more than happy I did.

The stories are laid in an alternate universe, which diverged from ours in the time of Richard Lionheart. According to *their* history, that worthy numbskull didn't die at Chaluz but came back from the

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Aquitaine to ripen into such a wise monarch that the Anglo-French Empire for which he laid the foundations has lasted to this very day. So we end up with a rather dizzy culture that seems to combine the best of medieval and modern; for example, we have railroad trains and elevators (both steam-powered!), but short-distance travel still relies on the horse.

Oh, yes—there's another slight discrepancy between Lord Darcy's universe and ours; there, magic works. Now, in case that turns off all you hard-core SF types, let me say that Darcy has the most impeccable science-fictional credentials, chief among which is that the initial stories of the series were published in *Astounding* under John W. Campbell. In all of them, magic is—and is used as—an applied science. (There's something marvelous about the trade of forensic sorcerer—no pun intended.)

That factor obviously adds a new dimension to the tale of detection, which is what the Darcy stories are. It's not a genre I consider myself an expert judge of; but to my untutored taste, these stories work just fine. In one, My Lord Jilbert manages to get himself pushed out of the window of a locked room in which no one else is present—the room, unfortunately, is at the top of the 80-foot Red Tower of his Castle Gisors. Whodunit? Demons? Maybe—and maybe not.

Two of the others concern hanky-panky over a treaty between the current King John IV of the Anglo-French Empire and the Basileus Kyril of Constantinople, and one of those takes place on the famous Napoli Express—Paris to Naples in 34 hours (on the way paying an oblique *homage* to another famous Express murder).

These neat, clever stories with their meticulous alternate history milieu are to me the very essence of light reading; and as soon as I get some reading time to myself (about 1987, I calculate), I'm going to sit down and enjoy *Murder and Magic* and *Too Many Magicians*, the other two Lord Darcy books. Like all other really good detective stories, they're addictive.

The alternate universe concept is the major idea behind H. Beam Piper's *Paratime*; but here, instead of one, we've got lots of them. So many, in fact, that one particular time-line, which has learned to travel "across time," has a thriving culture based on exploitation of the others.

It's a benevolent exploitation, for the most part; and there are lots of rules and regulations to keep one time-line from contaminating another, and, incidentally, to keep the secret of cross-time travel. But accidents and malfeasance tend to happen, and four of the five

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stories in this collection deal with cross-time anomalies as handled by doughty Verkan Vall, Assistant Chief of the Paratime Police. In one, an awful thingie called a Venusian nighthound is set loose in our time-line (a relatively backward one, by the way); and Verkan has to eliminate it while making sure no one "here" becomes aware of its extraterrestrial, extratemporal origins. The longest story, "Time Crime," involves Verkan in ferreting out a cross-time slavery ring, with its roots in the home line. And in "Temple Trouble," the problem is, of all things, an exotic disease that is decimating the sacred rabbits of the god, Yat-Zar.

Sometimes Piper's plots and cross-time careering get a little messily confusing; and the large casts in each story are a bit hard to sort out, especially since he tends toward names redolent of Barsoom such as Tortha Karf, Ranthar Jard, and Vlasthor Arph (says Sandy?). But in all, *Paratime* is good fun; Piper's current popularity makes even more tragic his untimely death in 1964.

There's not too much that's new in the Samuel R. Delany collection, *Distant Stars*. There's one short story, "Omegahelm," that hasn't appeared elsewhere, and a reworking of one that has. The introductory essay is also new; it is the blend of charm and erudition that we've come to expect from Delany's work, fiction or non-.

That would be enough for the very large legion of his admirers to acquire the book, even at the oversize paperback price. But there are two other reasons that make it a must. One is the inclusion of the short novel, *Empire Star*, which is a real charmer. First published back in 1966, it has been unavailable for some time; I heartily recommend, for those who have never read it or have read it a while back, this odyssey of Comet Joe through a confusing but jolly universe of simplexity, complexity, and multiplexity.

The other reason is that the book is beautiful. For once, the term "lavishly illustrated" is deserved; the illustrations are not only multitudinous, but rich—lavish, indeed. And those for the novel and the famous "Time Considered as a Helix of Semi-Precious Stones" are very tricky; the latter, in fact, has a "special effects" credit. There are too many artists involved to name (oddly, all save two are given-named John—and one of those two is a Jeanette). But a collective cheer for the lot.

As I noted last month, Alan Garner's novels, now all available again, have moved from the rich magic of *The Weirdstone of Brisingamen* to the oblique mystery of *The Owl Service*. His *Red Shift*

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has never been in paperback in this country before, though it appeared in 1973. It tells three stories, intercut, of three young men, one of Roman Britain (time of Hadrian?), one of the time of the English Civil War, one contemporary. The stories are linked only by subtle similarities and an artifact: an ancient axe head. *Red Shift*, too, is mysterious, evocative, and very underplayed and low key; some might even question labelling it a fantasy, but the overtones of fantasy are there, and the writing is superb.

From the red to the black, *The Black Wheel*, that is; a legendary novel, seven chapters of which had been written by the great A. Merritt at his death. Finished by Hannes Bok, one of the two great fantasy artists of the pulp era, who also wrote, it was published in a minute edition by a small press in 1948. That edition was a gorgeous one, with full-page illustrations by Bok in an oversized hardcover, and is a prize much sought after by collectors now.

The novel is now in its first paperback appearance, and a curious work it is. To judge from Merritt's early chapters, it was to be a work in his occult vein, like *Burn, Witch, Burn!*; Bok has finished it as such, and in doing so, made a work that was twenty years ahead of its time. It is one of the few, even now, that builds an occult fantasy on the myths and history of Black Africa; it is, believe me, a far cry from the usual voodoo-cum-zombie nonsense.

In it, a yachtful of miscellaneous sophisticates on a pleasure cruise in the Caribbean runs afoul of a hurricane, and lays up for repairs at a deserted key. There they find an ancient ship, apparently sunk long ago and raised by the storm. The wheel of the title is the ship's wheel, exquisitely carved of black wood into a series of paired hands. The passengers of the yacht become obsessed and possessed by people from the past, mainly a group of black sorcerers of the legendary African kingdom of Ghana, sunk with the ship. (Their survival is a fascinating variation of the zombie theme.) This evolves into quite a climax, with a race for the Africans' treasure and another island with singularly repulsive inhabitants (symbolically albinic) for excitement along the way.

There are problems, perhaps inevitable under the circumstances of the dual authorship, though I must say on rereading, I found the Bok effort better than I remember. He has captured, particularly at the climax, the dreamlike—or nightmarish—quality that Merritt often achieved, though he never attains the extravagant, baroque splendor of Merritt at his best. The 1930s sophisticates are, from our liberated viewpoint, a bunch of stewed prudes, whose idea of decad-

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ence is confined to overindulgence in alcohol and gigolos. With a little historical perspective, though, it's worth checking out.

Of the two great fantasy artists mentioned above, the other is, of course, Virgil Finlay, and at this point it has become almost a game with me to see how many books collector and publisher Gerry de la Ree can put out of Finlay's work without a drop in quality. There is now a seventh, called *Virgil Finlay Remembered*; this is mostly art from the '50s and '60s, illustrating stories by a variety of authors, from Gernsbach to Ballard. There is also included a selection of Finlay's poetry and several memoirs. I am grateful beyond measure that Finlay's drawings are being given the permanency of these books.

Finlay's work was done mostly for magazines, and there is another piece of magazine history to hand, a hardcover facsimile of the April 1965 issue of *The Magazine of Fantasy and Science Fiction*, a companion to the recently published ditto of a 1939 *Astounding*. It's one of the first to be edited by *F&SF*'s genial current editor, Ed Ferman (I say "one of the first" since I goofed on that point with the *Astounding* and heard about it, believe me; so I'll play this one safe); and it's certainly propitious.

There's a short novel by Poul Anderson (*Arsenal Port*), a short story as well as the regular science column by Isaac Asimov, and a book column by the perspicacious Judith Merril. There's the first *F&SF* cartoon from Gahan Wilson (who has gone on to bigger if not better outlets such as *Playboy* and *The New Yorker*, but still contributes regularly to *F&SF*; admirable, I calls it).

And, I was overjoyed to see, another prize in this issue: "Lord Moon," one of two stories published in *F&SF* by "Jane Beauclerk" (in reality, it turns out, Mary Jane Engh). Both are true, lost masterpieces; I have treasured them since they appeared, and regretted the fact that they seem to have been totally forgotten by everyone else. Perhaps this reprint will convince some editor to convince Ms. Engh to add some more stories to this early manifestation of Dunsanian, Baroque SF.

(I might note that this issue was just a bit too early to carry a piece by that opinionated bear of a film critic of theirs.)

In addition to the facsimile itself, the book contains a preface by Ferman, and short memoirs by the authors and cover artist involved. Over the years, Ferman has done a wonderful job of editing *F&SF* while keeping a very low profile. This facsimile issue might serve

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as a tributory reminder of that, as well as being an amusing artifact in itself.

Finally, as usual, a note on publications from or by people connected with this publication; in this case, *Isaac Asimov Presents the Best Science Fiction of the 19th Century*, edited by Asimov, Charles C. Waugh, and Martin Greenberg.

ON A WRITING BOOK
by Darrell Schweitzer

Virtually all How-To-Write books tell the beginner the same things; that a story must have some sort of point, that the characters must develop, that you must decide what your story is about and focus on it, etc. You'd think that after a while, every possible bit of advice would be written. Maybe so, but *Creating Short Fiction* is different from most texts of its type in that it takes a psychological approach. Knight is a distinguished writer and anthologist, but he has also conducted Milford Workshops and taught at Clarions for over a decade now, and he has had a lot of experience with writers and with the creation of stories at all levels of professional competence. He understands how writers think and work. For all this is a How-To book, it is also an essay on creativity, on *being* a writer. Professionals will probably find that most of it rings true. Beginners will come to understand themselves better. There are also some very useful exercises, and Knight does remarkable things with diagrams and squiggly lines. He has also included one of his own stories, annotated.

Good for the individual would-be writer, or for use as a textbook in writing classes.

ON ANOTHER BOOK
by Martin Gardner

Outside a church in Rome is a large stone face with a gaping mouth. Legend has it that if you put your hand in the mouth and make a false statement, you'll never get it out. "May God forgive me," writes Rudy Rucker. "But I have been there, and I stuck my hand in the mouth and said, 'I will not be able to pull my hand back

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out.' "

The anecdote conveys the flavor of this informal, witty, brilliant, and profound book. For the first time a mathematician has surveyed, from a modern point of view, every aspect of infinity—that blinding point at which the mystery of transcendence shatters the clarity of logic, mathematics, and science. You will learn about Georg Cantor's paradise of transfinite numbers, and (in the opposite direction) the infinitesimal numbers of nonstandard calculus. You will be introduced to the paradoxes of logic and set theory, with their infinite regresses and infinite levels of meta-languages. You will learn about Kurt Gödel's staggering discovery that there are mathematical truths that can be never be proved true by mind or computer.

Is there an infinity of universes? An infinity of spacetime dimensions? Will our own cozy little cosmos expand forever or "bounce" forever? Do you know about Gödel's rotating universe in which travel into the past is theoretically possible? Or the "many worlds" interpretation of quantum mechanics in which every microsecond the universe splits into billions of parallel worlds? You will also learn of Rucker's own cyclical model, made half in jest, that starts with universes, then continues down a ladder of suns, planets, rocks, molecules, atoms, particles, quarks, . . . until it becomes an infinite set of the same universes it started with!

A great-great-great-grandson of Hegel, with a doctorate in set theory, Rucker now teaches mathematics at Randolph-Macon, and writes SF on the side. His first fantasy, *White Light* (Ace, 1980) is based on the work of Cantor and Gödel. (Ace will soon publish two more: *Spacetime Donuts* and *Software*.) Rucker got to know Gödel, and his book on infinity records several delightful conversations with this great man. Like Gödel, Rucker is a Platonic realist, for whom infinite sets are no less "real" than the number 8 (infinity rotated). All mathematical concepts "exist" in what Rucker calls the Mindscape. Beyond the Mindscape, beyond all the transfinite sets, lies the transcendent infinity that Hegel and Cantor called the Absolute. It is the Unknowable of Herbert Spencer, and it goes by many other names such as Brahmin, the Tao, and God.

Last March *Analog* published a story called "Schrödinger's Cat," based on the most notorious paradox of quantum mechanics. Who could have written it except Rucker? Read his marvelous book and your mind will flood with strange waters—waters that you can be sure will seep more and more into serious SF, written for those who are bored with Hollywood's crude mix of sex, violence, galactic wars, and paranormal powers.

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THE SF CONVENTIONAL CALENDAR
by Erwin S. Strauss

The Spring con(vention) season is about to begin. Now's the time to plan social weekends with your favorite SF authors, editors, artists and fellow fans. For a longer, later list, an explanation of cons, and a sample of SF folksongs, send me an SASE (addressed, stamped envelope) at 9850 Fairfax Sq. #232, Fairfax, VA 22031. (703) 273-6111 is the hot line. If a machine answers, leave your area code number and I'll call back at my expense. Send an SASE when writing cons. When phoning, give your name and reason for calling. See me as Filthy Pierre at cons.

ConFusion. For info, write: **AASFA, Box 1821, Ann Arbor MI 48106.** Or phone: **(313) 485-4824** (10 am to 10 pm only, not collect). Con will be held in: Ann Arbor, MI (if city omitted, same as in address) on: 29-31 Jan., 1982. Guests will include: Phyllis Eisenstein, N. Rest, Larry Tucker. Banquet, costumes, snow creature contest.

Boskone, Box G, MIT PO, Boston MA 02139. 12-14 Feb. Donald A. (DAW) Wollheim, Hugo artist Michael Whelan, Spider (Callahan's Crosstime Saloon) Robinson. At the Park Plaza hotel.

CapriCon, Bestler, 101 W. Harrison, Oak Park IL 60304. 26-28 Feb. Gene Wolfe, Mike Stein. "This Is Your Life: Godzilla" skit, Moebius Theatre, 43-man Squamish game, trivia bowl.

YuCon, c/o SFera, Ivanicgradska 41a, 41000, Zagreb, Yugoslavia. 26-28 Feb. Academic.

WisCon, Box 1624, Madison, WI 53701. (608) 231-2916 (days), 233-0326 (eves). 5-7 Mar. Terry ("Universe") Carr, Suzette Haden (Communipath) Elgin. The leading feminist oriented con.

UpperSouthClave, Box U122, Coll. Hts. Sta., Bowling Green KY 42101. Park City KY, 5-7 Mar. Irvin Koch. Relaxacon. Indoor heated swimming pool, private sauna, 24-hour party room.

TropiCon, Box 2811, Boca Raton FL 33432. 12-14 Mar. Samuel R. Delany, Vincent DiFate, Gene Wolfe, James Gunn, Brian Aldiss, John Morressy. Coordinated with the academic SwannCon.

KingKon, Box 1284, Colorado Springs CO 80901. (303) 633-8845. 12-14 Mar. L. Neil Smith, artist Gail Barton, Gordon Garb, Connie Willis, Masquerade, T-shirt competition.

CoastCon, Box 1423, Biloxi MS 39531. 12-14 Mar. Richard & Wendy ("Elfquest") Pini, Joe ("Forever War") Haldeman, Jo (Diadem) Clayton, George Alec Effinger. 24-hour party room.

NorWesCon, Box 24207, Seattle WA 98124. 19-21 Mar. Usually many writers attend this one.

LunaCon, Box 338, New York, NY 10150. Hasbrouck Heights NJ (near New York City), 19-21 Mar. Fred ("Berserker") Saberhagen, artist John Schoenherr, S. Stiles. Old-line Eastern con.

AprilCon, B-C SF Soc., 317 Ferris Booth Hall, Columb. U., New York NY 10027. 12 Apr. Disch.

ChannelCon, 4 Fletcher Rd., Chiswick, London W4 5AY, UK. Brighton, England, UK, 9-12 Apr. John Sladek, Angela Carter. EasterCon, the British national con. At the Metropole Hotel.

WesterCon, Box 11644, Phoenix AZ 85061. (602) 249-2616. Gordon R. ("Dorsai") Dickson, Dave ("Man Who Folded Himself") Gerrold, Fran Skene. The big Western regional convention.

ChiCon IV, Box A3120, Chicago IL 60690. 2-6 Sep., 1982. A. Bertram (Rim Worlds) Chandler, Kelly Freas, Lee Hoffman. The 1982 World SF Con. Go to smaller cons to prepare for this.

ConStellation, Box 1046, Baltimore MD 21203. 1-5 Sep., 1983. John (Zanzibar) Brunner, Dave Kyle, Jack (Well of Souls) Chalker. The 1983 WorldCon. Join now and avoid rate increase.

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CALINTANE EXPLAINS

by Robert Silverberg

art: Janet Aulisio

UNAUTHORIZED DUPLICATION
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Robert Silverberg came out of retirement a few years ago to write his widely-acclaimed, award-nominated epic, *Lord Valentine's Castle*, and now has gone on to produce a whole series of stories in the same background, to be collected as *Majipoor Chronicles*. All of them tell of the vast, low-density planet, Majipoor, on which humans have dwelt for many centuries, but are not native, and must mix with a variety of strange races. Majipoor is a place of complex ritual, presided over by the Pontifex, who seldom leaves his Labyrinth hidden beneath a wasteland, and his deputy and successor, the Coronal, who inhabits the fabulous Castle Mount. Far more mysterious a personage is the Lady of the Isle of Sleep, who sends dreams to men of good will, and nightmares to the wicked.

On the morning after the day when the crisis had reached its climax and the final lunacies had occurred, a strange hush settled over the Labyrinth of Majipoor, as if everyone were too stunned even to speak. The impact of yesterday's extraordinary events was just beginning to be felt, although even those who had witnessed what had taken place could not yet fully believe it. All the ministries were closed that morning, by order of the new Pontifex. The bureaucrats both major and minor had been put to extreme strain by the recent upheavals, and they were set at liberty to sleep it off, while the new Pontifex and the new Coronal—each amazed by the unanticipated attainment of kingship that had struck him with thunderclap force—withdrew to their private chambers to contemplate their astounding transformations. Which gave Calintane at last an opportunity to see his beloved Silimoor. Apprehensively—for he had treated her shabbily all month, and she was not an easily forgiving sort—he sent her a note that said, *I know I am guilty of shameful neglect, but perhaps now you begin to understand. Meet me for lunch at the cafe by the Court of Globes at midday and I will explain everything.*

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She had a quick temper at the best of times. It was virtually her only fault, but it was a severe one, and Calintane feared her wrath. They had been lovers a year; they were nearly betrothed to be betrothed; all the senior officials at the pontifical court agreed he was making a wise match. Silimoor was lovely and intelligent and knowledgeable in political matters, and of good family, with three Coronals in her ancestry, including no less than the fabled Lord Stiamot himself. Plainly she would be an ideal mate for a young man destined for high places. Though still some distance short of thirty, Calintane had already attained the outer rim of the inner circle about the Pontifex, and had been given responsibilities well beyond his years. Indeed, it was those very responsibilities that had kept him from seeing or even speaking at any length to Silimoor lately. For which he expected her to berate him, and for which he hoped without much conviction that she would eventually pardon him.

All this past sleepless night he had rehearsed in his weary mind a long speech of extenuation that began, "As you know, I've been preoccupied with urgent matters of state these last weeks, too delicate to discuss in detail with you, and so—" And as he made his way up the levels of the Labyrinth to the Court of Globes for his rendezvous with her he continued to roll the phrases about. The ghostly silence of the Labyrinth this morning made him feel all the more edgy. The lowest levels, where the government offices were, seemed wholly deserted, and higher up just a few people could be seen, gathering in little knotted groups in the darkest corners, whispering and muttering as though there had been a *coup d'etat,* which in a sense was not far wrong. Everyone stared at him. Some pointed. Calintane wondered how they recognized him as an official of the Pontificate, until he remembered that he was still wearing his mask of office. He kept it on anyway, as a kind of shield against the glaring artificial light, so harsh on his aching eyes. Today the Labyrinth seemed stifling and oppressive. He longed to escape its somber subterranean depths, those levels upon levels of great spiralling chambers that coiled down and down into the bowels of the planet. In a single night the place had become loathsome to him.

On the level of the Court of Globes he emerged from the lift and cut diagonally across that intricate vastness, decorated with its thousands of mysteriously suspended spheres, to the little cafe on the far side. The midday hour struck just as he entered it. Silimoor was already there—he knew she would be; she used punctuality to express displeasure—at a small table along the rear wall of polished onyx. She rose and offered him not her lips but her hand, also as he expected. Her smile was precise and cool. Exhausted as he was, he

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found her beauty almost excessive: the short golden hair arrayed like a crown, the flashing turquoise eyes, the full lips and high cheekbones, an elegance too painful to bear, just now. "I've missed you so," he said hoarsely.

"Of course. So long a separation—it must have been a dreadful burden—"

"As you know, I've been preoccupied with urgent matters of state these last weeks, too delicate to discuss in detail with you, and so—"

The words sounded impossibly idiotic in his own ears. It was a relief when she cut him off, saying smoothly, "There's time for all that, love. Shall we have some wine?"

"Please. Yes."

She signalled. A liveried waiter, a haughty-looking Hjort, came to take the order, and stalked away.

Silimoor said, "And won't you even remove your mask?"

"Ah. Sorry. It's been such a scrambled few days—"

He set aside the bright yellow strip that covered his nose and eyes and marked him as the Pontifex's man. Silimoor's expression changed as she saw him clearly for the first time; the look of serenely self-satisfied fury faded and something close to concern appeared on her face. "Your eyes are so bloodshot—your cheeks are so pale and drawn—"

"I've had no sleep. It's been a crazy time."

"Poor Calintane."

"Do you think I kept away from you because I *wanted* to? I've been caught up in this insanity, Silimoor."

"I know. I can see how much of a strain it's been."

He realized suddenly that she was not mocking him, that she was genuinely sympathetic, that in fact this was possibly going to be easier than he had been imagining.

He said, "The trouble with being ambitious is that you get engulfed in affairs far beyond your control, and you have no choice but to let yourself be swept along. You've heard what the Pontifex Arioc did yesterday?"

She stifled a laugh. "Yes, of course. I mean, I've heard the rumors. Everyone has. Are they true? Did it really happen?"

"Unfortunately, it did."

"How marvelous, how perfectly marvelous! But such a thing turns the world upside down, doesn't it? It affects you in some dreadful way?"

"It affects you, and me, and everyone in the world," said Calintane, with a gesture that reached beyond the Court of Globes, beyond the

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Labyrinth itself, encompassing the entire planet beyond these claustrophobic depths, from the awesome summit of Castle Mount to the far-off cities of the western continent. "Affects us all to a degree that I hardly understand yet myself. But let me tell you the story from the beginning—"

Perhaps you were not aware that the Pontifex Arioc has been behaving strangely for months. I suppose there's something about the pressures of high office that eventually drives people crazy, or perhaps you have to be at least partly mad in the first place to aspire to high office. But you know that Arioc was Coronal for thirteen years under Dizimaule, and now he's been Pontifex a dozen years more, and that's a long time to hold that sort of power. Especially living here in the Labyrinth. The Pontifex must yearn for the outside world now and then, I'd imagine—to feel the breezes on Castle Mount or hunt gihornas in Zimroel or just to swim in a real river anywhere—and here he is miles and miles underground in this maze, presiding over his rituals and his bureaucrats until the end of his life.

One day about a year ago Arioc suddenly began talking about making a grand processional of Majipoor. I was in attendance at court that day, along with Duke Guadeloom. The Pontifex called for maps and started laying out a journey down the river to Alaisor, over to the Isle of Sleep for a pilgrimage and a visit to the Lady at Inner Temple, then across to Zimroel, with stops at Piliplok, Nimoya, Pidruid, Narabal, you know, *everywhere,* a tour that would last at least five years. Guadeloom gave me a funny look and gently pointed out to Arioc that it's the Coronal who makes grand processionals, not the Pontifex, and that Lord Struin had only just come back from one a couple of years ago.

"Then I am forbidden to do so?" the Pontifex asked.

"Not precisely forbidden, your majesty, but custom dictates—"

"That I remain a prisoner in the Labyrinth?"

"Not at all a prisoner, your majesty, but—"

"But I am rarely if ever to venture into the upper world?"

And so on. I must say my sympathies were with Arioc; but remember that I am not, like you, a native of the Labyrinth, only one whose government duties have brought him here, and I do find life underground a little unnatural at times. At any rate Guadeloom did convince his majesty that a grand processional was out of the question. But I could see the restlessness in the Pontifex's eyes.

The next thing that happened was that his majesty started slip-

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ping out by night to wander around the Labyrinth by himself. No one knows how often he did it before we found out what was going on, but we began to hear odd rumors that a masked figure who looked much like the Pontifex had been seen in the small hours lurking about in the Court of Pyramids or the Hall of Winds. We regarded that as so much nonsense, until the night when some flunky of the bedchamber imagined he had heard the Pontifex ring for service and went in and found the room empty. I think you will remember that night, Silimoor, because I was spending it with you and one of Guadeloom's people hunted me down and made me leave, claiming that an urgent meeting of the high advisers had been convened and my services were needed. You were quite upset—furious, I'd say. Of course what the meeting was about was the disappearance of the Pontifex, though later we covered it up by claiming it was a discussion of the great wave that had devastated so much of Stoienzar.

We found Arioc about four hours past midnight. He was in the Arena—you know, that stupid empty thing that the Pontifex Dizimaule built in one of *his* crazier moments—sitting crosslegged at the far side, playing a zootibar and singing songs to an audience of five or six ragged little boys. We brought him home. A few weeks later he got out again and managed to get as far up as the Court of Columns. Guadeloom discussed it with him: Arioc insisted that it is important for a monarch to go among his people and hear their grievances, and he cited precedents as far back as the kings of Old Earth. Quietly Guadeloom began posting guards in the royal precincts, supposedly to keep assassins out—but who would assassinate a Pontifex? The guards were put there to keep Arioc in. But though the Pontifex is eccentric he's far from stupid, and despite the guards he slipped out twice more in the next couple of months. It was becoming a critical problem. What if he vanished for a week? What if he got out of the Labyrinth entirely, and went for a stroll in the desert?

"Since we can't seem to prevent him from roaming," I said to Guadeloom, "why don't we give him a companion, someone who'll go on his adventures with him and at the same time see to it that no harm comes to him?"

"An excellent idea," the Duke replied. "And I appoint you to the post. The Pontifex is fond of you, Calintane. And you are young enough and agile enough to be able to extricate him from any trouble into which he may stumble."

That was six weeks ago, Silimoor. You will surely recall that I

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suddenly ceased spending my nights with you at that time, pleading an increase of responsibilities at court, and thus our estrangement began. I could not tell you what duty it was that now occupied my nights, and I could only hope you did not suspect me of having shifted my affections to another. But I can now reveal that I was compelled to take up lodgings close by the bedchamber of the Pontifex and give him attendance every night; that I began to do most of my sleeping at random hours of the day; and that by one stratagem and another I became companion to Arioc on his nocturnal jaunts.

It was taxing work. I was in truth the Pontifex's keeper, and we both knew it, but I had to take care not to underscore the fact by unduly imposing my will on him. And yet I had to guard him from rough playmates and risky excursions. There are rogues, there are brawlers, there are hotheads; no one would knowingly harm the Pontifex but he might easily come by accident between two who meant to harm each other. In my rare moments of sleep I sought the guidance of the Lady of the Isle—may she rest in the bosom of the Divine—and she came to me in a blessed sending, and told me that I must make myself the Pontifex's friend if I meant not to be his jailer. How fortunate we are to have the counsel of so kind a mother in our dreams! And so I dared to initiate more than a few of Arioc's adventures myself. "Come, let us go out tonight," I said to him, which would have frozen Guadeloom's blood, had he known. It was my idea to take the Pontifex up into the public levels of the Labyrinth for a night of taverns and marketplaces—masked, of course, beyond chance of recognition. I led him into mysterious alleyways where gamblers lived, but gamblers known to me, who posed no threats. And it was I who on the boldest night of all actually guided him beyond the walls of the Labyrinth itself. I knew it was what he most desired, and even he feared to attempt it, so I proposed it to him as my secret gift, and he and I took the private royal passageway upward that emerges at the Mouth of Waters. We stood together so close to the River Glayge that we could feel the cool air that blows down from Castle Mount, and we looked up at the blazing stars. "I have not been out here in six years," said the Pontifex. He was trembling and I think he was weeping behind his mask; and I, who had not seen the stars either for much too long, was nearly as deeply moved. He pointed to this one and that, saying it was the star of the world from which the Ghayrog folk came, and this the star of the Hjorts, and that one there, that trifling dot of light, was none other than the sun of Old Earth. Which I doubted, since I had been taught otherwise in school, but he was in such joy that I could

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not contradict him then. And he turned to me and gripped my arm and said in a low voice, "Calintane, I am the supreme ruler of this whole colossal world, and I am nothing at all, a slave, a prisoner. I would give everything to escape this Labyrinth and spend my last years in freedom under the stars."

"Then why not abdicate?" I suggested, astounded at my audacity.

He smiled. "It would be cowardice. I am the elect of the Divine, and how can I reject that burden? I am destined to be a Power of Majipoor to the end of my days. But there must be some honorable way to free myself from this subterranean misery."

And I saw that the Pontifex was neither mad nor wicked nor capricious, but only lonely for the night and the mountains and the moons and the trees and the streams of the world he had been forced to abandon so that the government might be laid upon him.

Next came word, two weeks ago, that the Lady of the Isle, Lord Struin's mother and the mother of us all, had fallen ill and was not likely to recover. This was an unusual crisis that created major constitutional problems, for of course the Lady is a Power of rank equal to Pontifex and Coronal, and replacing her should hardly be done casually. Lord Struin himself was reported to be on his way from Castle Mount to confer with the Pontifex—foregoing a journey to the Isle of Sleep, for he could not possibly reach it in time to bid his mother farewell. Meanwhile Duke Guadeloom, as high spokesman of the Pontificate and chief officer of the court, had begun to compile a list of candidates for the post, which would be compared with Lord Struin's list to see if any names were on both. The counsel of the Pontifex Arioc was necessary in all of this, and we thought that would be beneficial to him in his present unsettled state by involving him more deeply in imperial matters. In at least a technical sense the dying Lady was his wife, for under the formalities of our succession law he had adopted Lord Struin as his son when choosing him to be Coronal; of course the Lady had a lawful husband of her own somewhere on Castle Mount, but you understand the legalities of the custom, do you not? Guadeloom informed the Pontifex of the impending death of the Lady and a round of governmental conferences began. I did not take part in these, since I am not of that level of authority or responsibility.

I am afraid we assumed that the gravity of the situation might cause Arioc to become less erratic in his behavior, and at least unconsciously we must have relaxed our vigilance. On the very night that the news of the death of the Lady reached the Labyrinth, the Pontifex slipped away alone for the first time since I had been as-

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signed to keep watch over him. Past the guards, past me, past his servants—out into the interminable intricate complexities of the Labyrinth, and no one could find him. We searched all night and half the next day. I was beside myself with terror, both for him and for my career. In the greatest of apprehension I sent officers out each of the seven mouths of the Labyrinth to search that bleak and torrid desert outside; I myself visited all the rakish haunts to which I had introduced him; Guadeloom's staff prowled in places unknown to me; and throughout all this we sought to keep the populace from knowing that the Pontifex was missing. I think we must have succeeded in that.

We found him in mid-afternoon of the day after his disappearance. He was in a house in the district known as Stiamot's Teeth in the first ring of the Labyrinth and he was disguised in women's clothes. We might never have found him at all but for some quarrel over an unpaid bill, which brought proctors to the scene, and when the Pontifex was unable to identify himself satisfactorily and a man's voice was heard coming from a supposed woman the proctors had the sense to summon me, and I hurried to take custody of him. He looked appallingly strange in his robes and his bangles, but he greeted me calmly by name, acting perfectly composed and rational, and said he hoped he had not caused me great inconvenience.

I expected Guadeloom to demote me. But the Duke was in a forgiving mood, or else he was too bound up in the larger crisis to care about my lapse, for he said nothing whatever about the fact that I had let the Pontifex get out of his bedchamber. "Lord Struin arrived this morning," Guadeloom told me, looking harried and weary. "Naturally he wanted to meet with the Pontifex at once, but we told him that Arioc was asleep and it was unwise to disturb him—this while half my people were out searching for him. It pains me to lie to the Coronal, Calintane."

"The Pontifex is genuinely asleep in his chambers now," I said.

"Yes. Yes. And there he will stay, I think."

"I will make every effort to see to that."

"That's not what I mean," said Guadeloom. "The Pontifex Arioc is plainly out of his mind. Crawling through laundry chutes, creeping around the city at night, decking himself out in female finery—it goes beyond mere eccentricity, Calintane. Once we have this business of the new Lady out of the way, I'm going to propose that we confine him permanently to his quarters under strong guard—for his own protection, Calintane, his own protection—and hand the pontifical duties over to a regency. There's precedent for that. I've

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been through the records. When Barhold was Pontifex he fell ill of swamp fever and it affected his mind, and—"

"Sir," I said, "I don't believe the Pontifex is insane."

Guadeloom frowned. "How else could you characterize one who does what he's been doing?"

"They are the acts of a man who has been king too long, and whose soul rebels against all that he must continue to bear. But I have come to know him well, and I venture to say that what he expresses by these escapades is a torment of the soul, but not any kind of madness."

It was an eloquent speech and, if I have to say it myself, courageous, for I am a junior counsellor and Guadeloom was at that moment the third most powerful figure in the realm, behind only Arioc and Lord Struin. But there comes a time when one must put diplomacy and ambition and guile aside, and simply speak the plain truth; and the idea of confining the unhappy Pontifex like a common lunatic, when he already suffered great pain from his confinement in the Labyrinth alone, was horrifying to me. Guadeloom was silent a long while and I suppose I should have been frightened, speculating whether I would be dismissed altogether from his service or simply sent down to the record-keeping halls to spend the remainder of my life shuffling papers, but I was calm, totally calm, as I awaited his reply.

Then came a knock at the door: a messenger, bearing a note sealed with the great starburst that was the Coronal's personal seal. Duke Guadeloom ripped it open and read the message and read it again, and read it a third time, and I have never seen such a look of incredulity and horror pass over a human face as crossed his then. His hands were shaking; his face was without color.

He looked at me and said in a strangled voice, "This is in the Coronal's own hand, informing me that the Pontifex has left his quarters and has gone to the Place of Masks, where he has issued a decree so stupefying that I cannot bring myself to frame the words with my own lips." He handed me the note. "Come," he said, "I think we should hasten to the Place of Masks."

He ran out, and I followed, trying desperately to glance at the note as I went. But Lord Struin's handwriting is jagged and difficult, and Guadeloom was moving with phenomenal speed, and the corridors were winding and the way poorly lit; so I could only get a snatch of the content here and there, something about a proclamation, a new Lady designated, an abdication. Whose abdication if not that of the Pontifex Arioc? Yet he had said to me out of the

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depths of his spirit that it would be cowardice to turn his back on the destiny that had chosen him to be a Power of the realm.

Breathless I came to the Place of Masks, a zone of the Labyrinth that I find disturbing at the best of times, for the great slit-eyed faces that rise on those gleaming marble plinths seem to me figures out of nightmare. Guadeloom's footsteps clattered on the stone floor, and mine doubled the sound of his a good way behind, for though he was more than twice my age he was moving like a demon. Up ahead I heard shouts, laughter, applause. And then I saw a gathering of perhaps a hundred fifty citizens, among whom I recognized several of the chief ministers of the Pontificate. Guadeloom and I barged into the group and halted only when we saw figures in the green-and-gold uniform of the Coronal's service, and then the Coronal himself. Lord Struin looked furious and dazed at the same time, a man in shock.

"There is no stopping him," the Coronal said hoarsely. "He goes from hall to hall, repeating his proclamation. Listen: he begins again!"

And I saw the Pontifex Arioc at the head of the group, riding on the shoulders of a colossal Skandar servant. His majesty was dressed in flowing white robes of the female style, with a splendid brocaded border, and on his breast lay a glowing red jewel of wondrous immensity and radiance.

"Whereas a vacancy has developed among the Powers of Majipoor!" cried the Pontifex in a marvelously robust voice. "And whereas it is needful that a new Lady of the Isle of Sleep! Be appointed herewith and swiftly! So that she may minister to the souls of the people! By appearing in their dreams to give aid and comfort! And! Whereas! It is my earnest desire! To yield up the burden of the Pontificate that I have borne these twelve years! Therefore—

"I do herewith! Using the supreme powers at my command! Proclaim that I be acclaimed hereafter as a member of the female sex! And as Pontifex I do name as Lady of the Isle the woman Arioc, formerly male!"

"Madness," muttered Duke Guadeloom.

"This is the third time I have heard it, and still I cannot believe it," said the Coronal Lord Struin.

"—and do herewith simultaneously abdicate my pontifical throne! And call upon the dwellers of the Labyrinth! To fetch for the Lady Arioc a chariot! To transport her to the port of Stoien! And thence to the Isle of Sleep so that she may bring her consolations to you all!"

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And in that moment the gaze of Arioc turned toward me, and his eyes for an instant met mine. He was flushed with excitement and his forehead gleamed with sweat. He recognized me, and he smiled, and he *winked*, an undeniable wink, a wink of joy, a wink of triumph. Then he was carried away out of my sight.

"This must be stopped," Guadeloom said.

Lord Struin shook his head. "Listen to the cheering! They love it. The crowd grows larger as he goes from level to level. They'll sweep him up to the top and out the Mouth of Blades and off to Stoien before this day is out."

"You are Coronal," said Guadeloom. "Is there nothing you can do?"

"Overrule the Pontifex, whose every command I have sworn to serve? Commit treason before hundreds of witnesses? No, no, no, Guadeloom, what's done is done, preposterous as it may be, and now we must live with it."

"All hail the Lady Arioc!" a booming voice bellowed.

"All hail! The Lady Arioc! All hail! All hail!"

I watched in utter disbelief as the procession moved on through the Place of Masks, heading for the Hall of Winds or the Court of Pyramids beyond. We did not follow, Guadeloom and the Coronal and I. Numb, silent, we stood motionless as the cheering, gesticulating figures disappeared. I was abashed to be among these great men of our realm at so humiliating a moment. It was absurd and fantastic, this abdication and appointment of a Lady, and they were shattered by it.

At length Guadeloom said thoughtfully, "If you accept the abdication as valid, Lord Struin, then you are Coronal no longer, but must make ready to take up residence here in the Labyrinth, for you are now our Pontifex."

Those words fell upon Lord Struin like mighty boulders. In the frenzy of the moment he had evidently not thought Arioc's deed through even to its first consequence.

His mouth opened but no words came forth. He opened and closed his hands as though making the starburst gesture in his own honor, but I knew it was only an expression of bewilderment. I felt shivers of awe, for it is no small thing to witness a transfer of succession, and Struin was wholly unprepared for it. To give up the joys of Castle Mount in the midst of life, to exchange its brilliant cities and splendid forests for the gloom of the Labyrinth, to put aside the starburst crown for the senior diadem—no, he was not ready at all, and as the truth of it came home to him his face turned ashen and

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his eyelids twitched madly.

After a very long while he said, "So be it, then. I am the Pontifex. And who, I ask you, is to be Coronal in my place?"

I suppose it was a rhetorical question. Certainly I gave no answer, and neither did Duke Guadeloom.

Angrily, roughly, Struin said again, "Who is to be Coronal? I ask you!"

His gaze was on Guadeloom.

I tell you, I was near to destroyed by being witness of these events, that will never be forgotten if our civilization lasts another ten thousand years. But how much more of an impact all this must have had on them! Guadeloom fell back, spluttering. Since Arioc and Lord Struin both were relatively young men, little speculation on the succession to their thrones had taken place; and though Guadeloom was a man of power and majesty, I doubt that he had ever expected himself to reach the heights of Castle Mount, and certainly not in any such way as this. He gaped like a gaffed gromwark and could not speak, and in the end it was I who reacted first, going down on my knee, making the starburst to him, crying out in a choked voice, "Guadeloom! Lord Guadeloom! Hail, Lord Guadeloom! Long life to Lord Guadeloom!"

Never again will I see two men so astonished, so confused, so instantly altered, as were the former Lord Struin now Pontifex and the former Duke Guadeloom now Coronal. Struin was stormy-faced with rage and pain, Lord Guadeloom half broken with amazement.

There was another huge silence.

Then Lord Guadeloom said in an oddly quavering voice, "If I am Coronal, custom demands that my mother be named the Lady of the Isle, is that not so?"

"How old is your mother?" Struin asked.

"Quite old. Ancient, one could say."

"Yes. And neither prepared for the tasks of the Ladyship nor strong enough to bear them."

"True," said Lord Guadeloom.

Struin said, "Besides, we have a new Lady this day, and it would not do to select another so soon. Let us see how well her Ladyship Arioc conducts herself in Inner Temple before we seek to put another in her place, eh?"

"Madness," said Lord Guadeloom.

"Madness indeed," said the Pontifex Struin. "Come, let us go to the Lady, and see her safely off to her Isle."

I went with them to the upper reaches of the Labyrinth, where

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we found ten thousand people hailing Arioc while he or she, barefoot and in splendid robes, made ready to board the chariot that would conduct her or him to the port of Stoien. It was impossible to get close to Arioc, so close was the press of bodies. "Madness," said Lord Guadeloom over and over. "Madness, madness!"

But I knew otherwise, for I had seen Arioc's wink and I understood it completely. This was no madness at all. The Pontifex Arioc had found his way out of the Labyrinth, which was his heart's desire. Future generations, I am sure, will think of him as a synonym for folly and absurdity; but I know that he was altogether sane, a man to whom the crown had become an agony and whose honor forbade him simply to retire into private life.

And so it is, after yesterday's strange events, that we have a Pontifex and a Coronal and a Lady, and they are none of them the ones we had last month, and now you understand, beloved Silimoor, all that has befallen our world.

Calintane finished speaking and took a long draught of his wine. Silimoor was staring at him with an expression that seemed to him a mixture of pity and contempt and sympathy.

"You are like small children," she said at last, "with your titles and your royal courts and your bonds of honor. Nevertheless I understand, I think, what you have experienced and how it has unsettled you."

"There is one thing more," said Calintane.

"Yes?"

"The Coronal Lord Guadeloom, before he took to his chambers to begin the task of comprehending these transformations, appointed me his chancellor. He will leave next week for Castle Mount. And I must be at his side, naturally."

"How splendid for you," said Silimoor coolly.

"I ask you therefore to join me there, to share my life at the Castle," he said as measuredly as he could.

Her dazzling turquoise eyes stared frostily into his.

"I am native to the Labyrinth," she answered. "I love dearly to dwell in its precincts."

"Is that my answer, then?"

"No," said Silimoor. "You will have your answer later. Much like your Pontifex and your Coronal, I require time to accustom myself to great changes."

"Then you *have* answered!"

"Later," she said, and thanked him for the wine and for the tale

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he had told, and left him at the table. Calintane eventually rose, and wandered like a spectre through the depths of the Labyrinth in an exhaustion beyond all exhaustion, and heard the people buzzing as the news spread—Arioc the Lady now, Struin the Pontifex, Guadeloom the Coronal—and it was to him like the droning of insects in his ears. He went to his chamber and tried to sleep, but no sleep came, and he fell into gloom over the state of his life, fearing that this sour period of separation from Silimoor had done fatal harm to their love, and that despite her oblique hint to the contrary she would reject his suit. But he was wrong. For, a day later, she sent word that she was ready to go with him, and when Calintane took up his new residence at Castle Mount she was at his side, as she still was many years later when he succeeded Lord Guadeloom as Coronal. His reign in that post was short but cheerful, and during his time he accomplished the construction of the great highway at the summit of the Mount that bears his name; and when in old age he returned to the Labyrinth as Pontifex himself it was without the slightest surprise, for he had lost all capacity for surprise that day long ago when the Pontifex Arioc had proclaimed himself to be the Lady of the Isle.

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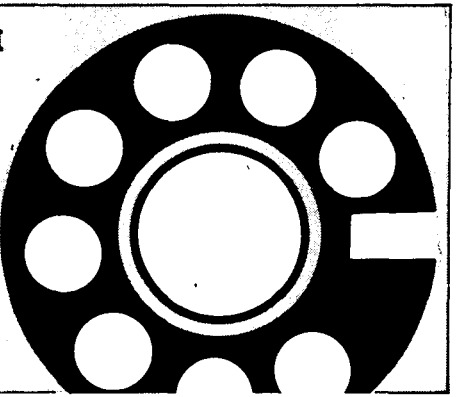

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MYSTERY TILES AT MURRAY HILL

by Martin Gardner

An earlier tale, reprinted as Puzzle 15 in my *Science Fiction Puzzle Tales* (Clarkson Potter, 1981) reported on the work of French archeologists, of the 25th century, in unearthing the ruins of what had once been New Jersey. The state had been totally destroyed by the great nuclear war of 2037. The same group, after completing its Secaucus dig, turned its attention to Murray Hill in the hope of finding some remnants of Bell Laboratories.

Their efforts were soon rewarded. Large portions of the lab's main building were found intact. One small office, on a floor where Bell's mathematicians worked, had a wall covered with a curious periodic pattern of brightly colored ceramic tiles. Figure 1 shows what a fragment of the wall looked like.

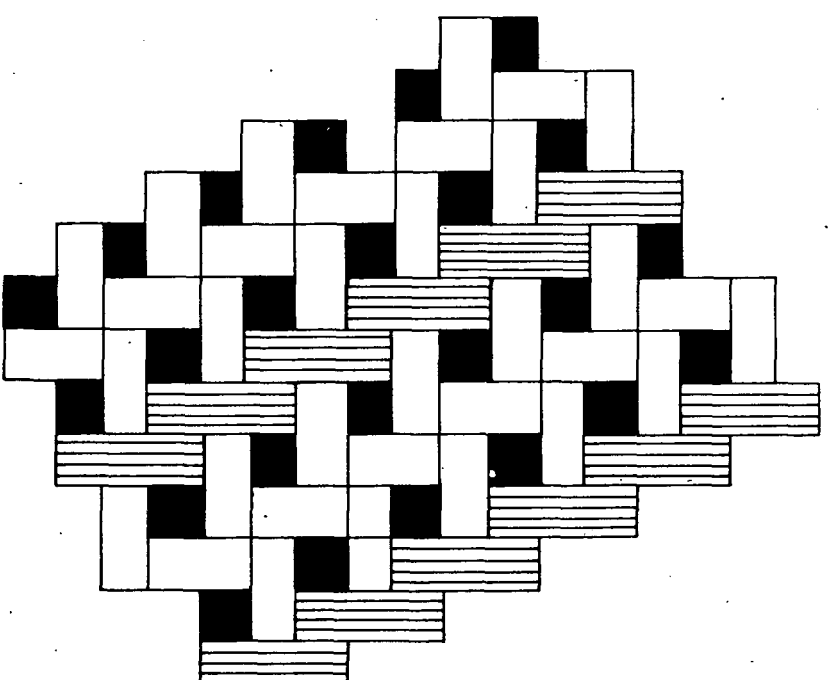

Figure 1

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Back in Paris, a group of French mathematicians studied the pattern. "It looks like a conventional tiling with three kinds of straight polyominoes," said Clyde Barge, a noted graph theorist.

"I can't believe it's not more than that," said Doris Snapshutter, Clyde's associate. "After all, we know the office belonged to Ronald L. Graham, the famous combinatorialist who discovered the Graham tile."

The Graham tile, found in 1986, is the only known shape that tiles the plane only in a nonperiodic way. It is a non-convex polygon with 71 sides. Graham was perhaps better known to the general public in his day for his work with Marvin Minsky in constructing the first robot capable of juggling 100 balls.

"I see what you mean," said Clyde. "It's unlikely a man of Graham's interests would have had his wall tiled in anything but some sort of remarkable pattern. See if you can find something about it in the literature of the period."

Doris spent several days at her computer console, searching old twentieth-century math journals for papers on polygonal tiling. She finally found what she was looking for. A paper in a 1982 issue of *Mathematics Magazine,* written by Graham and four friends (Fan Chung, E. N. Gilbert, J. B. Shearer, and J. H. van Lint), described the pattern.

The five mathematicians had set themselves the following unusual task. A rectangle is divided into smaller rectangles, all sides of which are integral, and in such a way that no sub-rectangle is formed by two or more rectangles. Such a tiling is said to be "irreducible." For example, the pattern in Figure 2 is not irreducible because of the subrectangle *ABCD*.

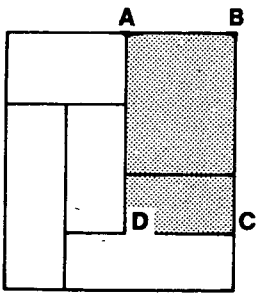

Figure 2

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The problem is this. What is the smallest average area of tiles that can be obtained by tiling a rectangle according to the rules? Of course without the proviso about irreducibility, the minimum average is 1. You simply divide the rectangle into unit squares.

Figure 3 shows how a rectangle can be divided to obtain 1.875 as the average area of a tile. (The average is the total area of 15, divided by the number of tiles, 8.) Can this average be lowered?

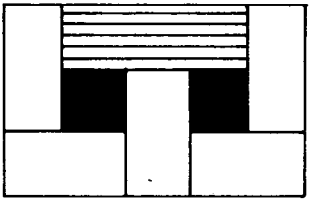

Figure 3

It can. In 1980 Graham and his colleagues discovered the infinite pattern that Graham had placed on his wall. By a clever use of what are called "weighting functions," they were able to show that this is the only irreducible pattern of integral rectangles that tiles the entire plane in such a way that the average area of a tile is minimized.

"But can a rectangle be tiled so as to achieve this minimum?" Clyde asked.

"No," replied Doris. "But it can come arbitrarily close. You simply take a very large portion of the infinite pattern, as nearly rectangular as possible, then fill it in around the ragged edges. By going to larger and larger hunks of the pattern, you can reduce the average area of a tile to a value as close to the minimum as you please."

What is this minimum average? It is easily calculated from the pattern, but if you can't see how to do it, turn to page 55.

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WHY IS THERE SO LITTLE SCIENCE IN LITERATURE

Gregory Benford is Professor of Physics at the University of California, Irvine. His research interests include solid state physics, plasma physics, and high-energy astrophysics. That accounts for the science part. The literature part is partially represented by his novels *In the Ocean of Night, The Stars in Shroud,*

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and the winner of the 1980 Nebula award for best novel, *Timescape*. Herewith, he discusses some of the problems encountered in blending the two.

Every now and then, I meet a scientist who remarks on the rarity of fiction which deals with science in a realistic fashion. This usually comes up in the course of a discussion of how scientists are portrayed in science fiction—a subject which can provoke you to laughter and tears at the same time—but the question extends over the whole of literature, I think: In this age of furious intellectual expansion, fueled by the astonishing revelations of science, driven by science's child, technology—why does literature reflect so little of these great engines of change?

It's puzzling. One's first thought is to reflect back over the successful depictions of science or scientists outside the realm of science fiction, to get away from the genre influences which might distort the answer. Alas, there is no great body of such work. Occasional novels stand out as marginal cases, such as Sinclair Lewis's *Arrowsmith*; but this is concerned with medical research and does not delve far into medicine as science at all. (To the public, white-smocked doctors are a frequent emblem for science. To me, though, they most often work as engineers of the body, using known techniques in ingenious but not deeply creative ways. Like other engineers, they know and use the *content* of science (the factual results), but do not often advance science itself. It is interesting to note how often men trained as physicians become writers—Arthur Conan Doyle and Somerset Maugham come to mind. Yet they seldom portrayed scientists.) Eleazar Lipsky's *The Scientists* (1959) is an unusual and quite successful attempt to show scientific rivalry. It was quite well reviewed and widely read when it appeared, but seems to have slipped from literary memory. Other prominent writers have used scientific ideas or themes or metaphors in basically "realistic" narratives: Thomas Pynchon in *The Crying of Lot 49* (entropy), Lawrence Durrell in *The Alexandria Quartet* (relativity and quantum mechanics, rather loosely used), and Robert Coover in *The Universal Baseball Association, Inc., J. Henry Waugh Prop.* (entropy and the theory of chance).

The outstanding example of a novelist dealing with the world of a career scientist is C.P. Snow's eleven-volume series collectively called "Strangers and Brothers." This long and uneven set concerns the academic and administrative career of an Englishman who begins by doing research and ends in the corridors of power, paralleling

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Snow's life. Snow's first significant novel, *The Search,* was to my mind his best. It tells of the tedium and occasional excitement of research in crystallography, in Cambridge during the 1930s. It concludes with a moral question, matching personal loyalty against the scientist's implicit need to honor the standards of truth in his profession. After this book, Snow moved on to academic politics and the manner of bureaucratic man, getting further from science as an electrifying process of discovery, and more into its growing rôle in governmental power. The series mirrors the lives of many scientists, reflecting the sobering fact that for most of us the path to higher salary and greater influence inevitably leads us away from the primary experience which got us into the scientific professions in the first place.

These are all good books, but why are there so few of them? After all, science is the big driving term in the equation of modern times. Why have literary folk (outside science fiction) so neglected the life of the scientist?

Part of it is simple ignorance. Writers are trained in humanistic departments of universities, not in labs. T.S. Eliot was quite prepared to write of the life of a bank clerk, because he had *been* a bank clerk. Nobody becomes a scientist by accident, or as a part-time job. Also, there may well be matters of style that interfere. Scientists are typically quantitative thinkers, problem-directed, and often not particularly skillful with words. There is a natural self-selection of people into groups, according to whether they think in words or in pictures (or in mathematics, which is another kind of language).

Similarly, it's unlikely that scientists will become authors, once they are launched on their careers. Most important, there isn't *time.* Scientists pour themselves into their work, and if they have a hobby at all, it tends to be athletic or at least far removed from the glades of academe. It's also sadly true that scientists are taught to write badly from the very beginning of their careers. The standard scientific style is impersonal, methodical to the point of dullness, and remorselessly literal. Most scientific papers and reports are written in the passive voice—*the electron is directed into the chamber and made to resonate*—which, after a few paragraphs, numbs the reader into a dulled acceptance. The passive voice actually hides what is going on, who does it, and why. This has made it the preferred mode for bureaucrats. It has infiltrated scientific discourse and is a deadly block to interesting communication. Yet some scientific journals *require* it, aping the mannerisms of the administrators. This is one of the worst features of the increasing connection between govern-

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ment and science. For a scientist, it makes the writing of fiction a strange process and explains the rather dull, mechanical style of C.P. Snow.

On top of such stylistic issues, scientists are trained to revere accuracy, with a constant rechecking of results and a wariness of speculation, all quite excellent standards for finding the truth, but often unnecessary baggage when you are trying to describe personal relationships, in which there is no final "truth" to seek, and what is most interesting is the variation in points of view. I imagine the hardest thing for a scientist to do in fiction is characterization, because of his habit of making both statements and ideas objective, free of bias, and couching them in a value-free style. The subtleties of real, living personality don't succumb to such descriptions. I always thought C.P. Snow's views of his characters read like the descriptions that job interviewers write—an outside picture, tracing probable surface motivations and qualities, but without understanding the driving force inside.

Similarly, the nuclear physicist Leo Szilard, when he turned to fiction, produced parables. In *The Voice of the Dolphins and Other Stories* (1961), he showed a common misunderstanding of scientists: that the intellectual point of a narrative is the whole point; and the story is a kind of vehicle to carry the reader to that conclusion. Once we get the point, presumably we can dispense with the story. Szilard simply omitted characterization as unnecessary for his purposes. His short stories are worth reading, but seem a bit bloodless: fiction as freight-hauler for philosophy.

So there are good reasons why scientists as a rule should be poor dramatists, when they do find the time or inclination to write. It may be more productive for them to stick to the rather dispassionate, analytical mode of Szilard, then. Fortunately, there has been a turn in recent literature which elevates this kind of distant voice to the realm of high art. This form is yet unnamed, unless we use "postmodernism," my favorite example of self-decapitating academic jargon. I shall feel free to term it *irrealism*. Two well-known practitioners, Jorge Luis Borges and Stanisław Lem, will serve to sketch in the ground I am attempting to cover. The strategy of these writers, in part, is to deliberately accent some aspect of the agreed-upon world, achieving a kind of super-realism that seems both recognizable and bizarre. Jorge Borges with his labyrinthian library is using a "realistic" portrayal of a mathematical abstraction. The ideas depicted are basic, underpinning much of modern mathematical thought (transfinite numbers, regression mathematics). One of the

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points Borges is making, I believe, is that the fundamental notions underlying our consensual reality are themselves strange, bewildering, even unhuman, when studied in the full glare of literary imagination. Behind many human ideas lurks the recurring image of the infinite, and the human imagination struggles to deal with it. Science itself has given us many of these images, and it leaves unanswered fundamental philosophical problems, to say nothing of the human quandary: how to deal with the ideas themselves. One way is through self-satire. What literary type or scientist can resist a chuckle when he begins reading the first line of Borges' "The Library of Babel": "The universe (which others call the Library) is composed of an indefinite and perhaps infinite number of hexagonal galleries. . . ."?

The shift here is not the breakdown of the consensus reality that modernism brought. It isn't the individual loss of a firm, fixed world, or a collapse into the illusions of one solitary person. Instead, it is the severe altering of an external reality for specific purposes, a sort of literary *gedanken* experiment. How better to explore what would or should or could be? The aim here is not to escape from a claustrophobic world, *à la* Kafka, but to embrace it, examine it in the warped mirror of possibilities. There is a continuum here, stretching from the mild dislocations of Barthelme, through the analytic fantasies of Borges and the dessicated cybernetic jokes and fables of Lem, on into the true ground of science fiction itself.

The trouble with this approach is that it's damned hard to make it *move* in the old plotting sense. You end up with rarefied fiction suited for relaxing mathematicians. We can probably expect more of this to come, because writers are generally getting more acquainted with the content of modern science. But I doubt that irrealism will be very engaging for the common reader; and although some literary scientists may contribute, I doubt that it will get over much of what the scientist himself is like. For in fact the unique facet of being a scientist is the daily confrontation with the vast landscape of the world as our intellect sees it.

The public—even the literate fraction—misses the diversity and spirit of scientists. They have been so saturated with the white-lab-smock image and the Einstein picture and the cold, mechanical robot depiction, that they fail to see scientists as real, working human beings. Every once in a while a book (usually autobiography, such as Freeman Dyson's *Disturbing the Universe*) will wrench the public away from such oversimplifications. This happened with Watson's insider's view in *The Double Helix*. Still, few reasonably alert people

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see that it is perhaps less important that scientists be smart, for example, than that they be a special breed of well-organized dreamers.

The specialists in depicting scientists as dreamers—and sometimes as fanatics—are, of course, the much-maligned science-fiction writers. In the end I think the SF authors will be seen as characteristic of our age, as poets and bards heralding a new force in human society. They were the first to notice the gathering momentum of technology, to think about its effects, and to see that the future would be a working-out of these themes. Some SF writers are or were scientists (Asimov, the late "Phillip Latham," Pournelle, Hoyle, Clement, etc.). Quite a few were or are doctors or other medical workers (Alan Nourse, F. Paul Wilson, Jesse Bone, Mildred Downey Broxon, Sharon Webb, Sharon Farber).

The academic critical fraternity still seems to feel that nobody can write about that old empty cliché, The Human Condition, and simultaneously understand how his own refrigerator works. This plainly tells us more about the origin of critics than the origin of ideas. The way science fiction emerged in America is mostly to blame for this. It was mired in the now-lost age of magazine pulp fiction, when the great demand for wordage to fill up the space between the ads led, by evolutionary momentum, to the invention of the electric typewriter, the first machine which allowed you to write faster than you could think, with results now quite obvious.

But these class origins should not—and in the long run will not—determine what we think of science fiction. It has had a long era now, existing as a well-tended private garden in which the fans loyally mistook domestic cabbages for literary roses. The confusion was usually benign. It allowed authors to say what they saw, without feeling the press of the past on their backs. Quite a few SF writers are or were engineers or scientists. As is often the case in America, engineering is confused with science; many SF works are essentially about futuristic technology, rather than the experience of the genuinely strange. This has led to many maladroit pieces of fiction, of course—the typical yarn with its blockheaded engineers scratching their heads for six thousand words, and then slapping together the right answer to a problem, just before the boredom becomes suffocating. But often it has given us glimpses into the real conflicts of real people, men and women who rub against the vexing corners of the scientific enterprise and know it by second nature. SF is a literature in which a usually silent class steps forward and sings of its dreams, its terrors. It will, I think, be fertile ground for study in

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the future. Here some distant literary archeologist will find the underswell of a technological age, a literature which gives glimpses of what it truly is like to do these things—to twist reality into new forms, pushing outward the boundary of a burgeoning intellectual empire—and I suspect it will make more interesting reading than the endless novels of suburban adultery or corporate scandal.

I have thought of these things for quite a while, as my own scientific career climbed and I doggedly kept writing. Even for a scientist, it is tempting to make your protagonist the convenient captain of a spaceship, or somesuch central, action-oriented figure. There are many established ways of dealing with such characters, and they make it easy to move the story along. How much harder it is to write about science as she truly is—the tedium, the deep musings on obscure problems, the occasional flashes of understanding. Seen from the outside, the scientist isn't much more interesting than a bank clerk. And at least the reader doesn't have to struggle merely to understand what the bank clerk is doing. Nevertheless, it seemed to me that SF without some sense of what science *is* was a bit too easy. I tried to incorporate a good deal of science and its human dimensions in all my work.

Still, it wasn't enough. So, starting in the late 1960s, I labored at a novel that was to deal primarily with the scientific experience. I chipped away at the problem, trying first a short story, then a novelette, letting my subconscious do most of the labor. (I worked only when it prompted me.) The result was my longest book, using the backgrounds I knew well (California, 1962, and Cambridge, England). When it was done I was halfway tempted to publish it as a conventional novel, not identifying it as science fiction. The American publisher was interested in this, and at first attempted getting attention for the book among the conventional reviewing spots. They had made the fatal mistake of including the words "science fiction" among the promotional copy, however, and this naturally sank it without trace among the New York media. The British publisher, Gollancz, didn't use the SF label, and thus the novel was treated as an interesting variant on the realistic mode. This experiment taught me a good deal about preconceptions, but it has little or nothing to do with what is actually on the pages of *Timescape*. It will be interesting to see how novels of this sort—assuming there will be more of them—fare among the shoals of critical theory. By then the circumstances of birth will have faded. (The title was later purchased for use as the imprint of a whole line of paperback and hardback books, which will undoubtedly confuse many about the whole thing.)

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In the long run I don't think readers are as wedded to categories as are publishers. Otherwise, we'd be thinking of *Huckleberry Finn* as a boy's adventure book, of *Moby Dick* as a fishing story, and of *The Great Gatsby* as a murder mystery.

What I'm arguing here, of course, is that the true avenue for the literary realization of what science is about lies not in the conventional novel, but in the deep roots of science fiction. Fred Hoyle understood this when he dashed off, in a month or so, a lasting piece of SF called *The Black Cloud*. As Hoyle's intelligent dust cloud enters our solar system, we see scientists dealing with the resulting problems in an analytical manner that blends with their differing personalities. As a novel it is both exciting and awkward, moving and wooden—but it rings with truths about how scientists think.

Science fiction is not an isolated plot, but a section of a greater garden. Perhaps some lurid and grotesque varieties grow here, but their lineage is clear: they come from the fundamental phylum that is also producing, for example, what I've called irrealism. In fact, the continuity of irrealism with SF is clear in such authors as Borges and Lem, and through the connection with alternate worlds novels, such as *Bring the Jubilee, Pavane, A Transatlantic Tunnel, Hurrah!, The Man in the High Castle,* and *The Alteration.*

In the end this continuity of aim, as part of a larger pattern in which literature reacts to science, may be the most important function of SF. For my own tastes, the excesses of SF can be corrected by paying closer attention to how science is actually *done,* rather than relying on the hoary old images of the dashing astronaut, the inevitably cranky-but-wise administrator, and the rest of the leaden cast left over from our earlier days. They can conceal more than they reveal. In particular, they obscure the fact that science is not a casebook of final answers but rather a method of questioning. It is, like literature, a continuing dialog among diverse and conflicting voices, no one ever wholly right or wholly wrong, but a steady conversation forever provisional and personal and living.

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THE END PAPERS
by Jonathan Milos

Mr. Milos lives in Indiana, in a small college town.

Driver-Captain Pirsic stood firm, though the First Speaker for the Inner Planets and the Executives for Venus, Terraluna, and Mars were looking lasers at him.

"I leave last," he said calmly.

"You *can't,*" the Venus Exec whined.

"The ship won't rise without me," said Pirsic, "and I don't board before you do."

The first Speaker looked pained but confident, and said, "We'll revoke your fee."

"I've already waived it," said the Driver-Captain. "It's not every day your culture goes Dyson." He looked up at the Sun and the sky-filling glow from the sphere that surrounded the whole star at the distance of the Earth.

Pirsic read the digits of his sleeve chronometer: **00:10** and counting down. "Boarding call, my lords and ladies."

"Waived his *fee,*" the First Speaker said dazedly; then she turned and walked up the beamway to the drivership. The Executives filed after.

Driver-Captain Pirsic stood alone, then, on the steely soil, the black-and-gilt ziggurat of the ship standing eight thousand meters high behind him, casting a soft shadow in sunlight and sphereshine. Pirsic laughed once, then turned and climbed the beam.

The drivership lifted from Earth on pressor thrust, tumbling to aim its peak and beambanks toward the last remnant of the last inner planet. Earth was hollowed out, Man-cratered, mined to build the Dyson sphere. The planetoids and the planets out to Mars were completely gone. Yellow-white light now shone out only through one gap in the sphere, and through the gaps in the Earth.

Pirsic's hands moved from the FLIGHT to the DRIVER controls. Tractors and pressors and shears reached out, cutting apart the continents, spilling the last lakefuls of water. Pirsic's touch, and the templating computers, and the beams, jigsawed the planet into the sphere wall, to catch and use the last bit of Solar energy.

The last piece slid into place upon a ray made visible by the dust of broken continents.

And the last man off the Earth turned out the light.

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MICHELANGELO & THE CELESTIAL DOME

A wealthy patron of the arts petitioned Michelangelo
to fresco the firmament
of the nighttime sky
with "celestial and otherwise cosmic designs."

Up until this time,
from the beginning of Time,
the firmament had been black, stark, & dark.
The knowledgeable opinion as to why this was so
is that the cosmos had been hurriedly constructed
(in less than a week's time
was the ongoing jest!)
with the apparent emphasis on utility and function.
Decorating it, or any esthetic impulses for that matter,
was probably not included in the budgetary allowances.
And the contractor having a celestial dome to build
with a limited expense account
was understandably hesitant to do any extra work,
however artistic,
that wasn't specifically spelled out in the contract.

Michelangelo was at first reluctant
to accept such a colossal commission,
but was half-cajoled and half-forced to take it.
He responded with one of the world's "timeless" masterpieces
bursting with immense power, scope, and vitality.

For this endeavor he constructed a towering scaffold
upon which he could lie
so he could paint with the most realistic
and minute detail.

The firmament as envisioned and portrayed by the artist
is a huge living organism
with billions upon billions of heavenly objects
majestically and poetically

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positioned about the previously pitch-black dome.

Red giant stars, yellowish moons, planets inhabited by
peculiar yet intriguing civilizations,
galaxies (spiral, elliptical, & irregular),
and galactic clusters, ringed planets,
comets with long hairy tails, nebulae,
and streaking shooting stars are all
depicted in a most compelling cosmic composition.

He even painted some stars in cunning configurations
which cleverly suggest such Earth objects as
creatures (goats, crabs, dogs, dolphins & birds),
people (Orion, Heracles, Cassiopea, & Andromeda),
and crafted items (dippers, both large and small).
These designs have come to be known as "constellations."
Whether Michelangelo actually intended the stars
to be perceived in these patterns,
as direct representations,
or whether they are unintended optical illusions
is a matter of much debate and speculation.

This part of the fresco
which was mainly painted directly overhead
was completed after four years of back-breaking work.
Yet despite the artist's highly acclaimed accomplishment
and much to Michelangelo's dismay
he was again called upon to further enhance his masterpiece
as his patron demanded something that was more diverting,
amusing, unearthly, and unimaginable along the edges.

This time, however, much of Michelangelo's displeasure,
violent changes in mood, and a sense of being
at odds with himself, his patron, and the universe
in general became vividly evident in his work.

His previously radiant vision darkened
to include such diabolical and depressing designs

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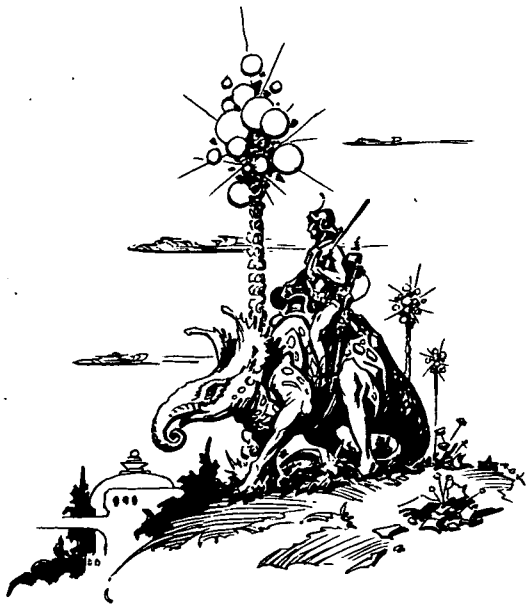
as an infinite universe forever expanding
into a cold frozen void of nothingness,
antimatter which annihilates matter upon contact,
exploding galaxies, lifeless bone-dry planets,
deadly cosmic rays, and black holes
which were depicted as swallowing up and obliterating
much of the masterpiece which he had previously painted.

Michelangelo then climbed down from his scaffolding
and stepped back to inspect what his hand had rendered.
He paused to wonder wearily
if he would be called upon again to aggrandize his work
with ever more incredible inventions
to meet his patron's insatiable desire
for the fantastic and paradoxical.

—Peter Payack



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SOLUTION TO MYSTERY TILES AT MURRAY HILL
(from page 40)

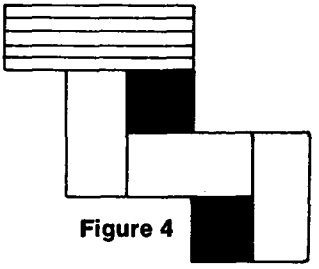

Figure 4

Figure 4 shows a "fundamental region" of the infinite tiling pattern. It is easy to see that by translating (sliding) this shape along the plane, without rotating it, you can tile the entire plane. The area of the shape is 11 unit squares, and since it contains six tiles, the average tile area is 11/6 or 1.83333 . . . .

"There's one thing I haven't told you yet," said Doris to Clyde. "Although no rectangle can achieve the 11/6 minimum, there is one rectangle, and one only, that actually goes *below* the lower bound."

"I'm not surprised," said Clyde. "Strange exceptions like that have a way of turning up in tiling theory. They're like spots of yin within the yang. What does the maverick rectangle look like?"

When Doris sketched it, Clyde was astounded by its simplicity. It contained only five tiles, and the average area of a tile was 9/5 = 1.8. Can you discover this exception before seeing it on page 85?

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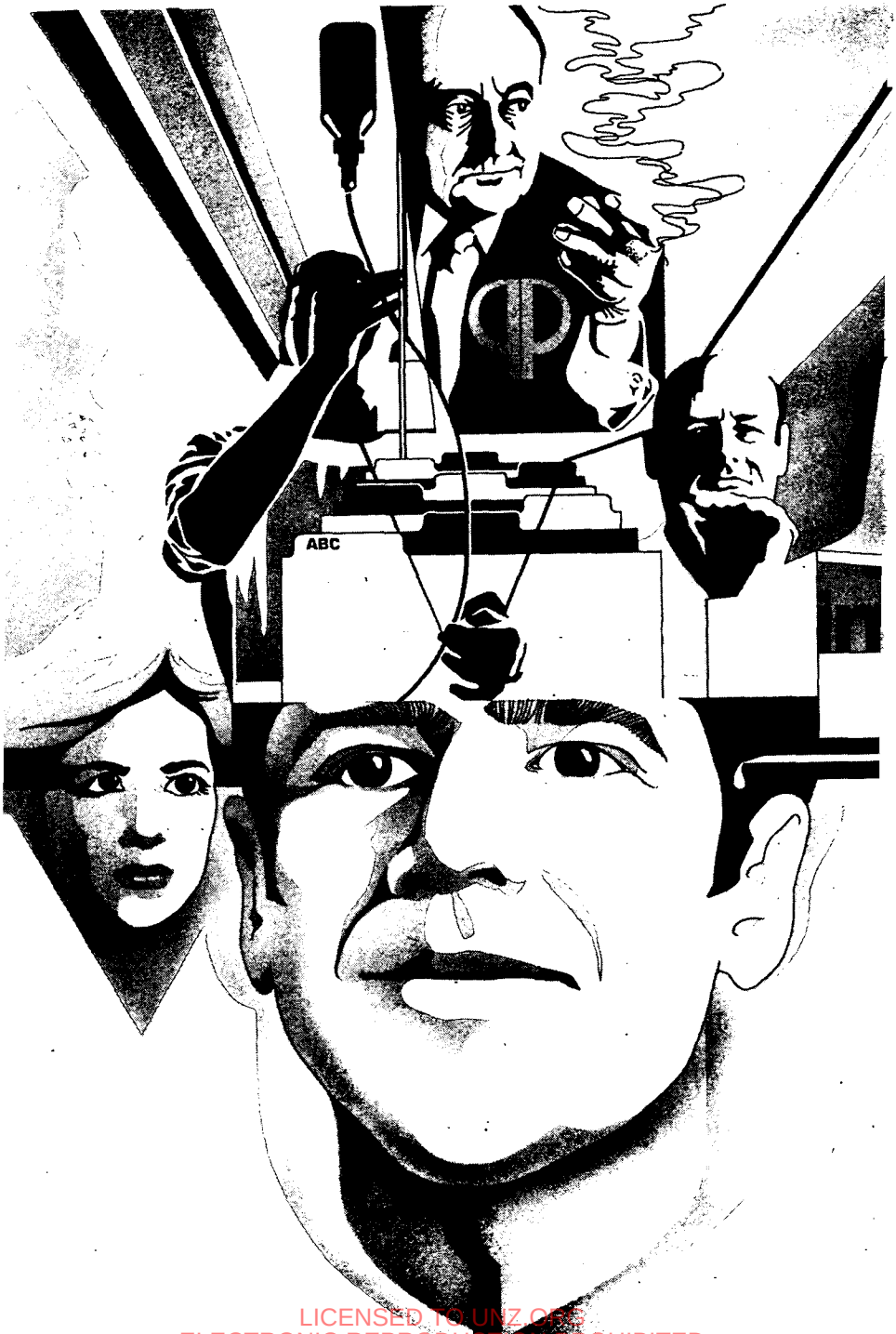

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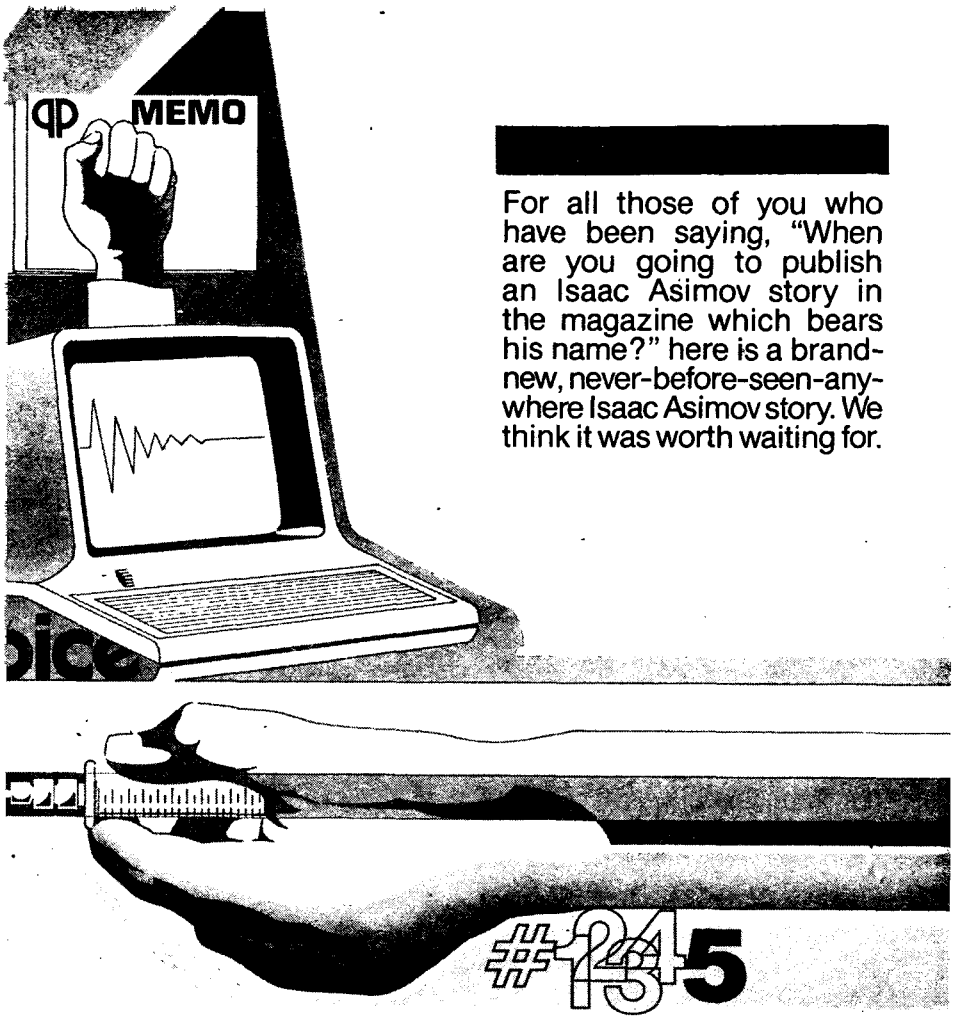

For all those of you who have been saying, "When are you going to publish an Isaac Asimov story in the magazine which bears his name?" here is a brand-new, never-before-seen-anywhere Isaac Asimov story. We think it was worth waiting for.

LEST WE REMEMBER

by Isaac Asimov

art: James Odbert

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1.

The problem with John Heath, as far as John Heath was concerned, was that he struck a dead average. He was sure of it. What was worse, he felt that Susan suspected it.

It meant he would never make a true mark in the world, never climb to the top of Quantum Pharmaceuticals, where he was a steady cog among the junior executives—never make the Quantum Leap.

Nor would he do it anywhere else, if he changed jobs.

He sighed inwardly. In just two more weeks he was going to be married, and for her sake he yearned to be upwardly mobile. After all, he loved her madly and wanted to shine in her eyes.

But then, that was dead average for a young man about to be married.

Susan Collins looked at John lovingly. But then, why not? He was reasonably good-looking and intelligent and a steady, affectionate fellow besides. If he didn't blind her with his brilliance, he at least didn't upset her with an erraticism he didn't possess.

She patted the pillow he had placed behind his head when he sat down in the armchair and handed him his drink, making sure he had a firm grip before she let go.

She said, "I'm practicing to treat you well, Johnny. I've got to be an efficient wife."

John sipped at his drink. "I'm the one who'll have to be on my toes, Sue. Your salary is higher than mine."

"It's all going to go into one pocket once we're married. It will be the firm of Johnny and Sue keeping one set of books."

"You'll have to keep it," said John, despondently. "I'm bound to make mistakes if I try."

"Only because you're sure you will. —When are your friends coming?"

"Nine, I think. Maybe nine-thirty. And they're not exactly friends. They're Quantum people from the research labs."

"You're sure they won't expect to be fed?"

"They said after dinner. I'm positive about that. It's business."

She looked at him quizzically. "You didn't say that before."

"Say what before?"

"That it was business. Are you sure?"

John felt confused. Any effort to remember *precisely* always left him confused. "They said so—I think."

Susan's look was that of good-natured exasperation, rather like

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the one she would have given a friendly puppy who is completely unaware its paws are muddy. "If you really thought," she said, "as often as you say, 'I think,' you wouldn't be so perennially uncertain. Don't you see it *can't* be business. If it were business, wouldn't they see you *at* business."

"It's confidential," said John. "They didn't want to see me at work. Not even at my apartment."

"Why here, then?"

"Oh, I suggested that. I thought you ought to be around, anyway. They're going to have to deal with the firm of Johnny and Sue, right?"

"It depends," said Susan, "on what the confidential is all about. Did they give you any hints?"

"No, but it couldn't hurt to listen. It could be something that would give me a boost in standing at the firm."

"Why you?" asked Susan.

John looked hurt. "Why *not* me?"

"It just strikes me that someone at your job-level doesn't require all that confidentiality and that—"

She broke off when the intercom buzzed. She dashed off to answer and came back to say, "They're on the way up."

2.

Two of them were at the door. One was Boris Kupfer, whom John had already spoken to—large and restless, with a hint of bluish stubble on his freshly-shaven chin.

The other was David Anderson, smaller and more composed. His quick eyes moved this way and that, however, missing nothing.

"Susan," said John, uncertainly, still holding the door open. "These are the two colleagues of mine that I told you about. Boris—" He hit a blank in his memory banks and stopped.

"Boris Kupfer," said the larger man morosely, jingling some change in his pocket, "and David Anderson here. It's very kind of you, Miss—"

"Susan Collins."

"It's very kind of you to make your place of residence available to Mr. Heath and to us for a private conference. We apologize for trespassing on your time and your privacy in this manner—and if

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you could leave us to ourselves for a while, we will be further grateful."

Susan stared at him solemnly. "Do you want me to go to the movies, or just into the next room."

"If you could visit a friend—"

"No," said Susan, firmly.

"You can dispose of your time as you please, of course. A movie, if you wish."

"When I said 'No'," said Susan, "I meant I wasn't leaving. I want to know what this is about."

Kupfer seemed nonplussed. He stared at Anderson for a moment, then said, "It's confidential, as Mr. Heath explained to you, I hope."

John, looking uneasy, said, "I explained that. Susan understands—"

"Susan," said Susan, "doesn't understand and wasn't given to understand that she was to absent herself from the proceedings. This is my apartment and Johnny and I are being married in two weeks—exactly two weeks from today. We are the firm of Johnny and Sue and you'll have to deal with the firm."

Anderson's voice sounded for the first time, surprisingly deep and as smooth as though it had been waxed. "Boris, the young woman is right. As Mr. Heath's soon-to-be wife, she will have a great interest in what we have come here to suggest; and it would be wrong to exclude her. She has so firm an interest in our proposal that if she were to wish to leave, I would urge her most strongly to remain."

"Well, then, my friends," said Susan, "what will you have to drink, and once I bring you those drinks, we can begin."

Both were seated rather stiffly and had sipped cautiously at their drinks, and then Kupfer said, "Heath, I don't suppose you know much about the chemical details of the company's work—the cerebro-chemicals, for instance."

"Not a bit," said John, uneasily.

"No reason you should," said Anderson, silkily.

"It's like this," said Kupfer, casting an uneasy glance at Susan.

"No reason to go into technical details," said Anderson, almost at the lower level of hearing.

Kupfer colored slightly. "Without technical details, Quantum Pharmaceuticals deals with cerebro-chemicals which are, as the name implies, chemicals that affect the cerebrum; that is, the higher functioning of the brain."

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"It must be very complicated work," said Susan, with composure.

"It is," said Kupfer. "The mammalian brain has hundreds of characteristic molecular varieties found nowhere else, which serve to modulate cerebral activity, including aspects of what we might term the intellectual life. The work is under the closest of corporate security, which is why Anderson wants no technical details. I *can* say this, though: we can go no farther with animal experiments. We're up against a brick wall if we can't try the human response."

"Then why don't you?" said Susan. "What stops you?"

"Public reaction if something goes wrong!"

"Use volunteers, then."

"That won't help. Quantum Pharmaceuticals couldn't take the adverse publicity if something went wrong."

Susan looked at them mockingly. "Are you two working on your own, then?"

Anderson raised his hand to stop Kupfer. "Young woman," he said, "let me explain briefly in order to put an end to wasteful verbal fencing. If we succeed, we will be enormously rewarded. If we fail, Quantum Pharmaceuticals will disown us and we will pay what penalty there is to be paid, such as the ending of our careers. If you ask us why we are willing to take this risk, the answer is, we do not think a risk exists. We are reasonably sure we will succeed, entirely sure we will do no harm. The corporation feels it cannot take the chance, but we feel we can. —Now, Kupfer, proceed!"

Kupfer said, "We have a memory chemical. It works with every animal we have tried. Their learning ability improves amazingly. It should work on human beings, too."

John said, "That sounds exciting."

"It *is* exciting," said Kupfer. "Memory is not improved by devising a way for the brain to store information more efficiently. All our studies show that the brain stores almost unlimited numbers of items perfectly and permanently. The difficulty lies in recall. How many times have you had a name at the tip of your tongue and couldn't get it? How many times have you failed to come up with something you *knew* you knew, and then did come up with it two hours later when you were thinking about something else. —Am I putting it correctly, David?"

"You are," said Anderson. "Recall is inhibited, we think, because the mammalian brain outraced its needs by developing a too-perfect recording system. A mammal stores more bits of information than it needs or is capable of using; and if all of it were on tap at all

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times, the creature would never be able to choose among them quickly enough for appropriate reaction. Recall is inhibited, therefore, to insure that items emerge from memory storage in manipulatable numbers, and with those items most desired not blurred by the accompaniment of numerous other items of no interest.

"There is a definite chemical in the brain that functions as a recall-inhibitor, and we have a chemical that neutralizes the inhibitor. We call it the Disinhibitor, and as far as we have been able to ascertain the matter, it has no deleterious side-effects."

Susan laughed. "I see what's coming, Johnny. You can leave now, gentlemen. You just said that recall is inhibited to allow mammals to react more efficiently, and now you say that the Disinhibitor has no deleterious side-effects. Surely the Disinhibitor will make the mammals react less efficiently, perhaps find themselves unable to react at all. And now you are going to propose that you try it on Johnny and see if you reduce him to catatonic immobility or not."

Anderson rose, his thin lips quivering. He took a few rapid strides to the far end of the room and back. When he sat down, he was composed and smiling. "In the first place, Miss Collins, it's a matter of dosage. We told you that the experimental animals all displayed enhanced learning ability. Naturally, we didn't eliminate the Inhibitor entirely; we merely suppressed it in part. Secondly, we have reason to think the human brain *can* handle complete disinhibition. It is much larger than the brain of any animal we have tested, and we all know its incomparable capacity for abstract thought.

"It is a brain designed for perfect recall, but the blind forces of evolution have not managed to remove the inhibiting chemical which, after all, was designed for and inherited from the lower animals."

"Are you sure?" asked John.

"You *can't* be sure," said Susan, flatly.

Kupfer said, "We are sure, but we need the proof to convince others. That's why we have to try a human being."

"John, in fact," said Susan.

"Yes."

"Which bring us," said Susan, "to the key question. Why John?"

"Well," said Kupfer, slowly, "we need someone for whom chances of success are most nearly certain, and in whom it would be most demonstrable. We don't want someone so low in mental capacity that we must use dangerously large doses of the Disinhibitor; nor do we want someone so bright that the effect will not be sufficiently

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noticeable. We need someone who's average. Fortunately, we have the full physical and psychological profiles of all the employees at Quantum; and in this and—in fact—all other ways, Mr. Heath is ideal."

"Dead average?" said Susan.

John looked stricken at the use of the phrase he had thought his own innermost, disgraceful, secret. "Come on, now," he said.

Ignoring John's outcry, Kupfer answered Susan, "Yes."

"And he won't be, if he submits to treatment?"

Anderson's lips stretched into another one of his cheerless smiles. "That's right. He won't be. This is something to think about if you're going to be married soon—the firm of Johnny and Sue, I think you called it. As it is, I don't think the firm will advance at Quantum, Miss Collins, for although Heath is a good and reliable employee he is, as you say, dead average. If he takes the Disinhibitor, however, he will become a remarkable person and move upward with astonishing speed. Consider what that will mean to the firm of Johnny and Sue."

"What does the firm have to lose?" asked Susan, grimly.

Anderson said, "I don't see how you can lose anything. It will be a sensible dose which can be administered at the laboratories tomorrow—Sunday. We will have the floor to ourselves; we will keep him under surveillance for a few hours. It is certain nothing could go wrong. If I could tell you of our painstaking experimentation and of our thoroughgoing exploration of all possible side-effects—"

"On animals," said Susan.

But John said, tightly, "I'll make the decision, Sue. I've had it up to here with that dead-average bit. It's worth some risk to me if it means getting off that dead-average dead-end."

"Johnny," said Susan. "Don't jump."

"I'm thinking of the firm, Sue. I want to contribute my share."

Anderson said, "Good, but sleep on it. We will leave two copies of an agreement we will ask you to look over and sign. Please don't show it to anybody whether you sign or not. We will be here tomorrow morning again to take you to the laboratory."

They smiled, rose, and left.

John read over the agreement with a troubled frown, then looked up. "You don't think I should be doing this, do you, Sue?"

"It worries me, sure."

"Look, if I have a chance to get away from that dead-average—"

Susan said, "What's wrong with that? I've met so many nuts and

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cranks in my short life that I welcome a nice, average guy like you, Johnny. Listen, I'm dead average, too."

"*You* dead-average? With your looks? Your figure?"

Susan looked down upon herself with a touch of complacency. "Well, then, I'm just your dead-average gorgeous girl," she said.

3.

The injection took place at 8 A.M. Sunday, no more than twelve hours after the proposition had been advanced. A thoroughly computerized body-sensor was attached to John in a dozen places, while Susan watched with keen-eyed apprehension.

Kupfer said, "Please, Heath, relax. All is going well, but tension speeds the heart-rate, raises the blood pressure, and skews our results."

"How can I relax?" muttered John.

Susan put in sharply, "Skews the results to the point where you don't know what's going on?"

"No, no," said Anderson. "Boris said all is going well, and it is. It is just that our animals were always sedated before the injection, and we did not feel sedation would have been appropriate in this case. So if we can't have sedation, we must expect tension. Just breathe slowly and do your best to minimize it."

It was late afternoon before John was finally disconnected.

"How do you feel?" asked Anderson.

"Nervous," said John. "Otherwise, all right."

"No headache?"

"No. But I want to visit the bathroom. I can't exactly relax with a bedpan."

"Of course."

John emerged, frowning. "I don't notice any particular memory improvement."

"That will take some time and will be gradual. The Disinhibitor must leak across the blood-brain barrier, you know," said Anderson.

4.

It was nearly midnight when Susan broke what had turned out to be an oppressively silent evening in which neither had much responded to the television.

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She said, "You'll have to stay here overnight. I don't want you alone when we don't really know what's going to happen."

"I don't feel a thing," said John, gloomily. "I'm still me."

"I'll settle for that, Johnny," said Susan. "Do you feel any pains or discomforts or oddnesses at all?"

"I don't think so."

"I wish we hadn't done it."

"For the firm," said John, smiling weakly. "We've got to take some chances for the firm."

5.

John slept poorly, and woke drearily, but on time. And he arrived at work on time, too, to start the new week.

By 11 A.M., however, his morose air had attracted the unfavorable attention of his immediate superior, Michael Ross. Ross was burly and black-browed and fit the stereotype of the stevedore without being one. John got along with him though he did not like him.

Ross said, in his bass-baritone, "What's happened to your cheery disposition, Heath—your jokes—your lilting laughter." Ross cultivated a certain preciosity of speech as though he were anxious to negate the stevedore-image.

"Don't exactly feel tip-top," said John, not looking up.

"Hangover?"

"No, sir," said John, coldly.

"Well, cheer up, then. You'll win no friends, scattering stinkweeds over the fields as you gambol along."

John would have liked to groan. Ross's sub-literary affectations were wearisome at the best of times, and this wasn't the best of times.

And to make matters worse, John smelled the foul odor of a rancid cigar and knew that James Arnold Prescott—the head of the sales division—could not be far behind.

Nor was he. Prescott entered, looked about, and said, "Mike, when and what did we sell Rahway last spring or thereabouts? There's some damned question about it and I think the details have been miscomputerized."

The question was not addressed to him, but John said quietly. "Forty-two vials of PCAP. That was on April 14, J.P., invoice number P-20543, with a 5 percent discount granted on payment within thirty days. Payment, in full, received on May 8."

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Apparently everyone in the room had heard that. At least, everyone looked up.

Prescott said, "How the Hell do you happen to know all that?"

John stared at Prescott for a moment, a vast surprise on his face. "I just happened to remember, J. P."

"You did, eh? Repeat it."

John did, faltering a bit; and Prescott wrote it down on one of the papers on John's desk, wheezing slightly as the bend at his waist compressed his portly abdomen up against his diaphragm and made breathing difficult. John tried to duck the smoke from the cigar without seeming to do so.

Prescott said, "Ross, check this out on your computer and see if there's anything to it at all." He turned to John with an aggrieved look. "I don't like practical jokers. What would you have done if I had accepted these figures of yours and walked off with them?"

"I wouldn't have done anything. They're correct," said John, conscious of himself as the full center of attention.

Ross handed Prescott the readout. Prescott looked at it and said, "This is from the computer?"

"Yes, J.P."

Prescott stared at it, then said, with a jerk of his head toward John, "And what's he? Another computer? His figures were correct."

John tried a weak smile, but Prescott growled and left, the stench of his cigar a lingering reminder of his presence.

Ross said, "What the hell was that little bit of legerdemain, Heath? You found out what he wanted to know and looked it up in advance to get some kudos?"

"No, sir," said John, who was gathering confidence. "I just happened to remember. I have a good memory for these things."

"And took the trouble to keep it from your loyal companions all these years? There's no one here who had any idea you hid a good memory behind that unremarkable forehead of yours."

"No point in showing it, Mr. Ross, is there? Now when I have, it doesn't seem to have gained me any good will, does it?"

And it hadn't. Ross glowered at him and turned away.

6.

John's excitement over the dinner table at Gino's that night made it difficult for him to talk coherently, but Susan listened patiently and tried to act as a stabilizing force.

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"You might just have happened to remember, you know," she said. "By itself it doesn't prove anything, Johnny."

"Are you crazy?" He lowered his voice at Susan's gesture and quick glance about. He repeated in a semi-whisper, "Are you crazy? You don't suppose it's the only thing I remember, do you? I think I can remember anything I ever heard. It's just a question of recall. For instance, quote some line out of Shakespeare."

"To be or not to be."

John looked scornful. "Don't be funny. Oh, well, it doesn't matter. The point is that if you recite any line, I can carry on from there for as long as you like. I read some of the plays for English Lit classes at college and some for myself and I can bring any of it back. I've tried. It flows! I suppose I can bring back any part of any book or article or newspaper I've ever read, or any TV show I've ever watched—word for word or scene for scene."

Susan said, "What will you do with all that?"

John said, "I don't have that consciously in my head at all times. Surely you don't—wait, let's order—"

Five minutes later, he said, "Surely you don't— My God, I haven't forgotten where we left off. Isn't it amazing? —Surely you don't think I'm swimming in a mental sea of Shakespearian sentences at all times. The recall takes an effort; not much of one, but an effort."

"How does it work?"

"I don't know. How do you lift your arm? What orders do you give your muscles? You just *will* the arm to lift upward and it does so. It's no trouble to do so, but your arm doesn't lift *until* you want it to. Well, I remember anything I've ever read or seen when I want to but not when I don't want to. I don't know how I do it, but I do it."

The first course arrived and John tackled it happily.

Susan picked at her stuffed mushrooms. "It sounds exciting."

"Exciting? I've got the biggest, most wonderful toy in the world. My own brain. Listen, I can spell any word correctly and I'm pretty sure I won't ever make any grammatical mistake."

"Because you remember all the dictionaries and grammars you ever read?"

John looked at her sharply. "Don't be sarcastic, Sue."

"I wasn't being—"

He waved her silent. "I never used dictionaries as light reading. But I do remember words and sentences in my reading and they were correctly spelled and correctly parsed."

"Don't be sure. You've seen any word misspelled in every possible

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way and every possible example of twisted grammar, too."

"Those were exceptions. By far the largest number of times I've encountered literary English, I've encountered it used correctly. It outweighs accidents, errors, and ignorance. What's more, I'm sure I'm improving even as I sit here, growing more intelligent steadily."

"And you're not worried. What if—"

"What if I become *too* intelligent? Tell me how on Earth you think becoming too intelligent can be harmful."

"I was going to say," said Susan, coldly, "that what you're experiencing is not intelligence. It's only total recall."

"How do you mean 'only'? If I recall perfectly, if I use the English language correctly, if I know endless quantities of material, isn't that going to make me seem more intelligent? How else need one define intelligence? You aren't growing just a little jealous, are you, Sue?"

"No," more coldly still. "I can always get an injection of my own if I feel desperate about it."

John put down his fork. "You can't mean that."

"I don't, but what if I did."

"Because you can't take advantage of your special knowledge to deprive me of my position."

"What position?"

The main course arrived; and for a few moments, John was busy. Then he said, in a whisper, "My position as the first of the future. *Homo superior!* There'll never be too many of us. You heard what Kupfer said. Some are too dumb to make it. Some are too smart to change much. I'm the one!"

"*Dead* average." One corner of Susan's mouth lifted.

"Once I was. There'll be others like me eventually. Not many, but there'll be others. It's just that I want to make my mark before the others come along. It's for the firm, you know. Us!"

He remained lost in thought thereafter, testing his brain delicately.

Susan ate in an unhappy silence.

7.

John spent several days organizing his memories. It was like the preparation of an orderly reference book. One by one, he recalled all his experiences in the six years he had spent at Quantum Phar-

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maceuticals and all he had heard and all the papers and memos he had read.

There was no difficulty in discarding the irrelevant and unimportant and storing them in a "hold till further notice" compartment where they did not interfere with his analysis. Other items were put in order so that they established a natural progression.

Against that skeletal organization, he resurrected the scuttlebutt he had heard; the gossip, malicious or otherwise; casual phrases and interjections at conferences which he had not been conscious of hearing at the time. Those items which did not fit anywhere against the background he had built up in his head were worthless, empty of factual content. Those which did fit clicked firmly into place and could be seen as true by that mere fact.

The further the structure grew, and the more coherent, the more significant new items became and the easier it was to fit them in.

Ross stopped by John's desk on Thursday. He said, "I want to see you in my office at the nonce, Heath, if your legs will deign to carry you in that direction."

John rose uneasily. "Is it necessary? I'm busy."

"Yes, you look busy." Ross looked over the clear desk which, at the moment, held nothing but a studio photo of a smiling Susan. "You've been this busy all week. But you've asked me whether seeing me in my office is necessary. For me, no; but for you, vital. There's the door to my office. There's the door to the hell out of here. Choose one or the other and do it fast."

John nodded and, without undue hurry, followed Ross into his office.

Ross seated himself behind his desk but did not invite John to sit. He maintained a hard stare for a moment, then said, "What the hell's got into you this week, Heath? Don't you know what your job is?"

"To the extent that I have done it, it would seem that I do," said John. "The report on Microcosmic is on your desk and complete and seven days ahead of deadline. I doubt that you can have complaints about it."

"You doubt, do you? Do I have permission to have complaints if I choose to after communing with my soul? Or am I condemned to applying to you for permission?"

"I apparently have not made myself plain, Mr. Ross. I doubt that you have *rational* complaints about it. To have those of the other variety is entirely up to you."

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Ross rose now. "Listen, punk, if I decide to fire you, you won't get the news by word of mouth. It won't be anything I say that will give you the glad tidings. You will go out through the door in a violent tumble and mine will be the propulsive force behind that tumble. Just keep that in your small brain and your tongue in your big mouth. —Whether you've done your work or not is not at question right now. Whether you've done everyone else's is. Who and what gives you the right to manage everyone in this place?"

John said nothing.

Ross roared, "Well?"

John said, "Your order was 'keep your tongue in your big mouth.' "

Ross turned a dangerous red. "You will answer questions, however."

John said, "I am not aware that I have been managing anyone."

"There's not a person in the place you haven't corrected at least once. You have gone over Willoughby's head in connection with the correspondence on the TMP's, you have been into general files using Bronstein's computer access, and God knows what else I haven't yet been told about and all in the last two days. You are disrupting the work of this department, and it must cease this moment. There must be dead calm, and instantaneously, or it will be tornado weather for you, my man."

John said, "If I have interfered in the narrow sense, it has been for the good of the company. In the case of Willoughby, his treatment of the TMP matter was putting Quantum Pharmaceuticals in violation of government regulations, something I have pointed out to you in one of several memos I have sent you which you apparently have not had occasion to read. As for Bronstein, he was simply ignoring general directions and costing the company fifty thousand in unnecessary tests, something I was easily able to establish by locating the necessary correspondence—merely to corroborate my clear memory of the situation."

Ross was swelling visibly through the talk. "Heath," he said, "you are usurping my role. You will, therefore, gather your personal effects and be off the premises before lunch, never to return. If you do, I will take extreme pleasure in helping you out again with my foot. Your official notice of dismissal will be in your hands, or down your throat, before your effects will be collected, work as quickly as you may."

John said, "Don't try to bully me, Ross. You've cost the company a quarter of a million dollars through incompetence and you know it."

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There was a short pause as Ross deflated. He said, cautiously, "What are you talking about?"

"Quantum Pharmaceuticals went down to the wire on the Nutley bid and missed out because a certain piece of information that was in your hands stayed in your hands and never got to the Board of Directors. You either forgot or you didn't bother and in either case you are not the man for your job. You are either incompetent or have sold out."

"You're insane."

"No one need believe me. The information is in the computer, if one knows where to look; and I know where to look. What's more, the knowledge is on file and will be on the desks of the interested parties two minutes after I leave these premises."

"If this were so," said Ross, speaking with difficulty, "you could not possibly know. This is a stupid attempt at blackmail by threat of slander."

"You know it's not slander. If you doubt that I have the information, let me tell you that there is one memorandum that is not in the records but can be reconstructed without too much difficulty from what is there. You would have to explain its absence, and it will be presumed you have destroyed it. You know I'm not bluffing."

"It's still blackmail."

"Why? I'm making no demands and no threats. I'm merely explaining my actions of the past two days. Of course, if I'm forced to resign, I'll have to explain why I resigned, won't I?"

Ross said nothing.

John said, coolly, "Is my resignation being requested?"

"Get out of here!"

"With my job? Or without it?"

Ross said, "You have your job." His face was a study in hatred.

8.

Susan had arranged a dinner at her apartment and had gone to considerable trouble for it. Never, in her own opinion, had she looked more enticing and never did she think it more important to move John, at least for a bit, away from his total concentration on his own mind.

She said, with an attempt at heartiness, "After all, we are celebrating the last nine days of single blessedness."

"We are celebrating more than that," said John with a grim smile.

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"It's only four days since I got the Disinhibitor and already I've been able to put Ross in his place. He'll never bother me again."

"We each seem to have our own notion of sentiment," said Susan. "Tell me the details of *your* tender remembrance."

John told the tale crisply, repeating the conversation verbatim and without hesitation.

Susan listened stonily, without in any way rising to the gathering triumph in John's voice. "How *did* you know all that about Ross?"

John said, "There are no secrets, Sue. Things just *seem* secret because people don't remember. If you can recall every remark, every comment, every stray word made to you or in your hearing and consider them all in combination, you find that every person gives himself away in everything. You can pick out meanings that will, in these days of computerization, send you straight to the necessary records. It can be done. I can do it. I have done it in the case of Ross. I can do it in the case of anybody with whom I associate."

"You can also get them furious."

"I got Ross furious. You can bet on that."

"Was that wise?"

"What can he do to me? I've got him cold."

"He has enough clout in the upper echelons—"

"Not for long. I have a conference set for 2 P.M. tomorrow with old man Prescott and his stinking cigar, and I'll cut Ross off at the pass."

"Don't you think you're moving too quickly?"

"Moving too quickly? I haven't even begun. Prescott's just a stepping stone. Quantum Pharmaceutical's just a stepping stone."

"It's still too quick. Johnny, you need someone to direct you. You need—"

"I need *nothing*. With what I have," he tapped his temple, "there's no one and nothing that can stop me."

Susan said, "Well, look, let's not discuss that. We have different plans to make."

"Plans?"

"Our own. We're getting married in just under nine days. Surely, you haven't returned to the sad old days when you forgot things."

"I remember the wedding," said John, testily, "but at the moment I've got to reorganize Quantum. In fact, I've been thinking seriously of postponing the wedding till I had things well in hand."

"Oh? And when might that be?"

"That's hard to tell. Not long at the rate I'm taking hold. A month or two, I suppose. Unless," and he descended into sarcasm, "you think that's moving too quickly."

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Susan was breathing hard. "Were you planning to consult with me on the matter?"

John raised his eyebrows. "Would it have been necessary? Where's the argument? Surely you see what's happening. We can't interrupt it and lose momentum. —Listen, did you know I'm a mathematical wiz. I can multiply and divide as fast as a computer because at some time in my life I have come across almost every simple bit of arithmetic and I can *recall* the answers. I read a table of square roots and I can—"

Susan cried, "My God, Johnny, you *are* a kid with a new toy. You've lost your perspective. Instant recall is good for nothing but playing tricks with. It doesn't give you one bit more intelligence, not an ounce, not a speck more of judgement, not a whiff more of commonsense. You're about as cute to have around as a little boy with a loaded grenade. You need looking after by someone with brains."

John scowled. "Do I? It seems to me that I'm getting what I want."

"Are you? Isn't it true that I'm what you want also?"

"What?"

"Go ahead, Johnny. You want me. Reach out and take me. Exercise that remarkable recall you have. Remember who I am, what I am, the things we can do, the warmth, the affection, the sentiment."

John, with his forehead still creased in uncertainty, extended his arms toward Susan.

She stepped out of them. "But you haven't got me, or anything about me. You can't remember me into your arms; you have to love me into them. The trouble is you don't have the good sense to do it and you lack the intelligence to establish reasonable priorities. —Here, take this and get out of my apartment or I'll hit you with something a lot heavier."

He stopped to pick up the engagement ring. "Susan—"

"I said get out. The firm of Johnny and Sue is hereby dissolved."

Her face blazed anger, and John turned meekly and left.

9.

When he arrived at Quantum the next morning, Anderson was waiting for him with a look of anxious impatience on his face.

"Mr. Heath," he said, smiling, and rising.

"What do you want?" demanded John.

"We are private here, I take it?"

"The place isn't bugged as far as I know."

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"You are to report to us day after tomorrow for examination. On Sunday. You recall that?"

"Of course I recall that. I'm incapable of not recalling. I *am* capable of changing my mind, however. Why do I need an examination?"

"Why not, sir? It is quite plain from what Kupfer and I have picked up that the treatment seems to have worked splendidly. Actually, we don't want to wait till Sunday. If you can come with me today—now, in fact—it would mean a great deal to us, to Quantum, and, of course, to humanity."

John said, curtly, "You might have held on to me when you had me. You sent me about my business, allowing me to live and work unsupervised so that you could test me under field conditions, and get a better idea of how things would work out. It meant more risk for me; but you didn't worry about that, did you?"

"Mr. Heath, that was not in our minds. We—"

"Don't tell me that. I remember every last word you and Kupfer said to me last Sunday, and it's quite clear to me that that *was* in your minds. So if I take the risk, I accept the benefits. I have no intention of presenting myself as a biochemical freak who has achieved my ability at the end of a hypodermic needle. Nor do I want others of the sort wandering around. For now, I have a monopoly and I intend to use it. When I'm ready—not before—I will be willing to cooperate with you and benefit humanity. But just remember, I'm the one who will know when I'm ready, not you. So don't call me; I'll call you."

Anderson managed a soft smile. "As to that, Mr. Heath, how can you stop us from making our announcement? Those who have dealt with you this week will have no trouble in recognizing the change in you and in testifying to it."

"Really? See here, Anderson: listen closely and do so without that foolish grin on your face. It irritates me. I told you I remember every word you and Kupfer spoke. I remember every nuance of expression, every sidelong glance. It all spoke volumes. I learned enough to check through sick-leave records with a good idea of what I was looking for. It would seem that I was not the first Quantum employee on whom you had tried the Disinhibitor."

Anderson was, indeed, not smiling. "That is nonsense."

"You know it is not, and you had better know I can prove it. I know the names of the men involved—one was a woman, actually—and the hospitals in which they were treated and the false histories with which they were supplied. Since you did not warn me

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of this, when you used me as your fourth experimental animal on two legs, I owe you nothing but a prison sentence."

Anderson said, "I won't discuss this matter. Let me say this, though. The treatment will wear off, Heath. You won't keep your total recall. You will have to come back for further treatment, and you can be sure it will be on our terms."

John said, "Nuts! You don't suppose I haven't investigated your reports—at least, those you haven't kept secret. And I already have a notion of what aspects you *have* kept secret. The treatment lasts longer in some cases than others. It invariably lasts longer where it is more effective. In my case, the treatment has been extraordinarily effective and it will endure a considerable time. By the time I come to you again, if I ever have to, I will be in a position where any failure on your part to cooperate will be swiftly devastating to you. Don't even think of it."

"You ungrateful—"

"Don't bother me," said John, wearily. "I have no time to listen to your froth. Go away. I have work to do."

Anderson's face was a study in fear and frustration as he left.

10.

It was 2:30 P.M. when John walked into Prescott's office, for once not minding the cigar smoke. It would not be long, he knew, before Prescott would have to choose between his cigars and his position.

With Prescott were Arnold Gluck and Lewis Randall, so that John had the grim pleasure of knowing he was facing the three top men in the division.

Prescott rested his cigar on top of an ashtray and said, "Ross has asked me to give you half an hour, and that's all I will give you. You're the one with the trick memory, aren't you?"

"My name is John Heath, sir, and I intend to present you with a rationalization of procedure for the company, one that will make full use of the age of computers and electronic communication and will lay the groundwork for further modification as the technology improves."

The three men looked at each other.

Gluck said, "Are you an expert in office management?"

"I don't have to be, sir. I have been here for six years, and I recall every bit of the procedure in every transaction in which I have been

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involved. That means the pattern of such transactions is plain to me and its imperfections, obvious. One can see toward what it is tending and where it is doing so wastefully and inefficiently. If you'll listen, I will explain. You will find it easy to understand."

Randall, whose red hair and freckles made him seem younger than he was, said sardonically, "Real easy, I hope, because we have trouble with hard concepts."

"You won't have trouble," said John.

"And you won't get a second more than twenty-one minutes," said Prescott, looking at his watch.

"It won't take that," said John. "I have it diagrammed, and I can talk quickly."

It took fifteen minutes and the three management personnel were remarkably silent in that interval.

Finally Gluck said, with a hostile glance out of his small eyes, "It sounds as though you are saying we can get along with half the management we are employing these days."

"Less than half," said John, coolly, "and be the more efficient for it. We can't fire ordinary personnel at will because of the unions, though we can profitably lose them by attrition. Management is not protected, however, and can be let go. They'll have pensions if they're old enough and can get new jobs if they're young enough. Our thought must be for Quantum."

Prescott, who had maintained an ominous silence, now puffed furiously at his noxious cigar and said, "Changes like this have to be considered carefully, and implemented, if at all, with the greatest of caution. What seems logical on paper can lose out in the human equation."

John said, "Prescott, if this reorganization is not accepted within a week, and if I am not placed in charge of its implementation, I will resign. I will have no trouble in finding employment with a smaller firm where this plan can be far more easily put into practice. Beginning with a small group of management people, I can expand in both quantity and efficiency of performance without additional hiring, and within a year I'll drive Quantum into bankruptcy. It would be fun to do this if I am driven to it, so consider carefully. My half-hour is up. Good-bye." And he left.

11.

Prescott looked after him with a glance of frigid calculation. He

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said to the other two, "I think he means what he says and that he knows every facet of our operations better than we do. We can't let him go."

"You mean we've got to accept his plan?" said Randall, shocked.

"I didn't say that. You two go, and remember this whole thing is confidential."

Gluck said, "I have the feeling that if we don't do something, all three of us will find ourselves on our butts in the street within a month."

"Very likely," said Prescott, "so we'll do something."

"What?"

"If you don't know, you won't get hurt. Leave it to me. Forget it for now and have a nice weekend."

When they were gone, he thought a while, chewing furiously on his cigar. He then turned to his telephone and dialed an extension. "Prescott here. I want you in my office first thing Monday morning. First thing. Hear me?"

12.

Anderson looked a trifle disheveled. He had had a bad weekend. Prescott—who had had a worse—said to him malevolently, "You and Kupfer tried again, didn't you?"

Anderson said, softly, "It's better not to discuss that, Mr. Prescott. You remember it was agreed that in certain aspects of research, a distance was to be established. We were to take the risks or the glory, and Quantum was to share in the latter but not in the former."

"And your salary was doubled with a guarantee of all legal payments to be Quantum's responsibility; don't forget that. This man, John Heath, was treated by you and Kupfer, wasn't he? Come on. There's no mistaking it. There's no point in hiding it."

"Well, yes."

"And you were so brilliant that you turned him loose on us—this—this—tarantula."

"We didn't anticipate this would happen. When he didn't go into instant shock, we thought it was our first chance to test the process in the field. We thought he would break down after two or three days, or it would pass."

Prescott said, "If I hadn't been protected so damned well, I wouldn't have put the whole thing out of my mind and I would have guessed what had happened when that bastard first pulled the computer bit

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and produced the details of correspondence he had no business remembering. —All right, we know where we are now. He's holding the company to ransom with a new plan of operations he can't be allowed to put through. Also, he can't be allowed to walk away from us."

Anderson said, "Considering Heath's capacity for recall and synthesis, is it possible that his plan of operations may be a good one?"

"I don't care if it is. That bastard is after my job and who knows what else and we've got to get rid of him."

"How do you mean, rid of him? He could be of vital importance to the cerebro-chemical project."

"Forget that. They're a disaster. You're creating a super-Hitler."

Anderson said, in soft-voiced anguish, "The effect will wear off."

"Yes? When?"

"At this moment, I can't be sure."

"Then I can't take chances. We've got to make our arrangements and do it tomorrow at the latest. We can't wait any longer."

13.

John was in high good humor. The manner in which Ross avoided him when he could and spoke to him deferentially when he had to affected the entire work force. There was a strange and radical change in the pecking order with himself at the top.

Nor could John deny to himself that he liked it. He revelled in it. The tide was moving strongly and unbelievably swiftly. It was only nine days since the injection of the Disinhibitor and every step had been forward.

Well, no; there had been Susan's silly rage at him, but he would deal with her later. When he showed her the heights to which he would climb in nine additional days—in ninety—

He looked up. Ross was at his desk, waiting for his attention but reluctant to do anything as crass as to attact that attention by as much as clearing his throat. John swivelled his chair, put his feet out before him in an attitude of relaxation and said, "Well, Ross?"

Ross said carefully, "I would like to see you in my office, Heath. Something important has come up and frankly, you're the only one who can set it straight."

John got slowly to his feet. "Yes? What is it?"

Ross looked about mutely at the busy room, with at least five men

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in reasonable earshot. Then he looked toward his office door and held out an inviting arm.

John hesitated, but for years Ross had held unquestioned authority over him, and at this moment, he reacted to habit.

Ross held his door open for John politely, stepped through himself and closed the door behind him, locking it unobtrusively and remaining in front of it. Anderson stepped out from the other side of the bookcase.

John said sharply, "What's all this about?"

"Nothing at all, Heath," said Ross, his smile turning into a vulpine grin. "We're just going to help you out of your abnormal state—take you back to normality. Don't move, Heath."

Anderson had a hypodermic in his hand. "Please, Heath, do not struggle. We wish you no harm."

"If I yell—" said John.

"If you make any sound," said Ross, "I will put a hammerlock on you and hold it till your eyes bug out. I would like to do that, so please try to yell."

John said, "I have the goods on both of you, safe on deposit. Anything that happens to me—"

"Mr. Heath," said Anderson, "nothing will happen to you. Something is going to *un*happen to you. We will put you back to where you were. That would happen anyway, but we will hurry it up just a little."

"So I'm going to hold you, Heath," said Ross, "and you won't move because if you do, you will disturb our friend with the needle and he might slip and give you more than the carefully calculated dose, and you might end up unable to remember anything at all."

Heath was backing away, breathless. "That's what you're planning. You think you'll be safe that way. If I forgot all about you, all about the information, all about its storage. But—"

"We're not going to hurt you, Heath," said Anderson.

John's forehead glistened with sweat. A near-paralysis gripped him.

"An amnesiac!" he said huskily, and with a terror that only someone could feel at the possibility who himself had perfect recall.

"Then you won't remember this either, will you?" said Ross. "Go ahead, Anderson."

"Well," muttered Anderson, in resignation, "I'm destroying a perfect test-subject." He lifted John's flaccid arm and readied the hypodermic.

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There was a knock at the door. A clear voice called "John!"

Anderson froze.

Ross had turned to look at the door. Now he turned back. "Shoot that stuff into him, Doc," he said in an urgent whisper.

The voice came again, "Johnny, I know you're in there. I've called the police. They're on the way."

Ross whispered again, "Go ahead. She's lying. And by the time they come, it's over. Who can prove anything?"

But Anderson was shaking his head vigorously. "It's his fiancée. She knows he was treated. She was there."

"You jackass."

There was the sound of a kick against the door, and then the voice sounded in a muffled, "Let go of me. They've got— Let go!"

Anderson said, "Having her push the thing was the only way we could get him to agree. Besides, I don't think we have to do anything. Look at him."

John had collapsed in a corner, eyes glazed, and clearly in a trance.

Anderson said, "He's been terrified, and that can produce a shock that will interfere with recall under normal conditions. I think the Disinhibitor has been wiped out. Let her in and let *me* talk to her."

14.

Susan looked pale as she sat with her arm protectively about the shoulders of her ex-fiancé. "What happened?"

"You remember the injection of—"

"Yes, yes. What happened."

"He was supposed to come to our office day before yesterday, Sunday, for a thorough examination. He didn't come. We worried and the reports from his superiors had me very perturbed. He was becoming arrogant, megalomaniac, irascible— Perhaps you noticed. —You're not wearing your engagement ring."

"We—quarreled," said Susan.

"Then you understand. He was— Well, if he were an inanimate device, we might say his motor was overheating as it sped faster and faster. This morning it seemed absolutely essential to treat him. We persuaded him to come here, locked the door and—"

"Injected him with something while I howled and kicked outside."

"Not at all," said Anderson. "We would have used a sedative, but we were too late. He had what I can only describe as a breakdown.

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You may search his body for fresh punctures, which, as his financée, I presume you may do without embarrassment, and you will find none."

Susan said, "I'll see about that. What happens now?"

"I am sure he will recover. He will be his old self again."

"Dead average?"

"He will not have perfect recall, but until ten days ago, he never had. —Naturally, the firm will give him indefinite leave on full salary. If any medical treatment is required, all medical expenses will be paid. And when he feels like it, he can return to active duty."

"Yes? Well, I will want all that in writing before the day is out, or I see my lawyer tonight."

"But, Miss Collins," said Anderson, "you know that Mr. Heath volunteered. You were willing, too."

"I think," said Susan, "that *you* know the situation was misrepresented to us and that you won't welcome an investigation. Just see to it that what you've just promised is in writing."

"You will have to, in return, sign an agreement to hold us guiltless of any misadventure your fiancé may have suffered."

"Possibly. I prefer to see what kind of a misadventure it is first. —Can you walk, Johnnie?"

John nodded and said, a little huskily, "Yes, Sue."

"Then let's go."

15.

John had put himself outside a cup of good coffee and an omelet before Susan permitted discussion. Then he said, "What I don't understand is how you happened to be there."

"Shall we say women's intuition?"

"Let's say Susan's brains."

"All right. Let's! After I threw the ring at you; I felt self-pitying and aggrieved; and after that wore off, I felt a severe sense of loss because—odd though it might seem to the average sensible person—I'm very fond of you."

"I'm sorry, Sue," said John, humbly.

"As well you should be. God, you were insufferable. But then I got to thinking that if you could get poor, loving me that furious, what must you be doing to your co-workers. The more I thought about it, the more I thought they might have a strong impulse to

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kill you. Now, don't get me wrong: I'm willing to admit you deserved killing, but only at *my* hands. I wouldn't dream of allowing anyone else to do it. I didn't hear from you—"

"I know, Sue. I had plans and I had no time—"

"You had to do it all in two weeks. I know, you idiot. By this morning I couldn't stand it anymore. I came to see how you were and found you behind a locked door."

John shuddered, "I never thought I'd welcome your kicking and screaming, but I did then. You stopped them."

"Will it upset you to talk about it?"

"I don't think so. I'm all right."

"Then what were they doing?"

"They were going to re-inhibit me. I thought they might be giving me an overdose and make me an amnesiac."

"Why?"

"Because they knew I had them all. I could ruin them and the company."

"You really could."

"Absolutely."

"But they didn't actually inject you, did they? Or was that another of Anderson's lies?"

"They really didn't."

"Are you all right?"

"I'm not an amnesiac."

"Well, I hate to sound like a Victorian damsel, but I hope you have learned your lesson."

"If you mean, do I realize you were right, I do."

"Then just let me lecture you for one minute, so you don't forget again. You went about everything too rapidly, too openly, and with too much disregard for the possible violent counteraction of others. You had total recall and you mistook it for intelligence. If you had someone who was really intelligent to guide you—"

"I needed you, Sue."

"Well, you've got me now, Johnny."

"What do we do next, Sue?"

"First, we get that paper from Quantum; and, since you're all right, we'll sign the release for them. Second, we get married on Saturday, just as we originally planned. Third, we'll see— But, Johnny?"

"Yes?"

"You're all right?"

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"Couldn't be better, Sue. Now we're together, everything's fine."

16.

It wasn't a formal wedding. Less formal than they had originally planned and fewer guests. No one was there from Quantum, for instance—Susan had pointed out, quite firmly, that that would be a bad idea.

A neighbor of Susan's had brought a video-camera to record the proceedings, something that seemed to John to be the height of schlock, but Susan had wanted it.

And then the neighbor had said to him with a tragic shrug, "Can't get the damn thing to turn on. You'd think they'd give me one in working order. I'll have to make a phone call." He hastened down the steps to the pay phone in the chapel lobby.

John advanced to look at the camera curiously. An instruction booklet lay on a small table to one side. He picked it up and leafed through the pages with moderate speed, then put it back. He looked about him, but everyone was busy. No one seemed to be paying attention to him.

He slid the rear panel to one side, unobtrusively, and peered inside. He then turned away and gazed at the opposite wall thoughtfully. He was still gazing even as his right hand snaked in toward the mechanism and made a quick adjustment. After a brief interval he put the rear panel back and flicked a toggle switch.

The neighbor came bustling back, looking exasperated. "How am I going to follow directions I can't make head or—" He frowned, then said, "Funny. It's on. It must have been working all the time."

17.

"You may kiss the bride," said the minister benignly, and John took Susan in his arms and followed orders with enthusiasm.

Susan whispered through unmoving lips, "You fixed that camera. Why?"

He whispered back, "I wanted everything right for the wedding."

She whispered, "You wanted to show off."

They broke apart, looking at each other through love-misted eyes,

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then fell into another embrace, while the small audience stirred and tittered.

Susan whispered, "You do it again, and I'll skin you. As long as no one knows you still have it, no one will stop you. We'll have it all within a year, if you follow directions."

"Yes, dear," whispered John.

POETRY PROBLEM

Poetry, shmoetry!
Scithers and Asimov
Buy witty limericks,
If they're SF.

Fellows, that rhyme scheme is
*Super*unworkable—
These double dactyls are
All I have left!

—Will Briggs

SHOEMAKER

Higgledy piggledy
P.M.A. Linebarger
Wrote many stories of
Polish and pith:

Opting for privacy
(Incomprehensible!)
Sold all his fables as
"Cordwainer Smith."

—Bryan A. Hollerbach

. . . SHOULDN'T THROW UNICORN HORNS

Higgledy piggledy
F. Gwynplaine MacIntyre,
Being, himself, quite a
Mystical gem,
Shouldn't poke fun with his
Mythobiographies—
He might be *one* of those
Mythical Them!

—John D. Seats

BATTLESTAR AGAIN?

Boobtooby scroobtooby
TV's *Galactica*
Left in its passing a
Feeling of dread;
Something with trappings so
Ancientegyptianal
Sooner or later might
Rise from the dead!

—John D. Seats

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SECOND SOLUTION TO MYSTERY TILES OF MURRAY HILL
(from page 55)

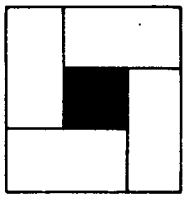

Figure 5

Figure 5 shows the only way to tile a rectangle (in this case a square) so that the average size of a tile is less than 1.83333 . . . . The average clearly is 9/5 = 1.8. Aside from this one case, all rectangular patterns have an average tile-size greater than 1.83333 . . . .

Little is known about the problem's generalization to three dimensions, using "tiles" that are "bricks" (rectangular parallelepipeds) with integral edges. As before, we rule out "reducible" patterns containing sub-bricks formed by two or more bricks; otherwise we could tile space with unit cubes.

Three 1 x 1 x 2 bricks, and two unit cubes, will form a 2 x 2 x 2 cube with an average brick volume of 8/5 = 1.6. Aside from this possible exception, a lower bound for the tiling of three-space with integral bricks is not known. If the tiles of Graham's wall are given a unit thickness, the result can be used for tiling large rectangular parallelepipeds with an average volume for the tiles that is arbitrarily close to 11/6. Whether this can be improved, and if so, by how much, remains a challenging unsolved problem.

FINAL SOLUTION TO "Tanya Hits and Misses"

Last month's cryptarithm was devised by Willy Engren, of Valby, Denmark. It was originally published in the *Journal of Recreational Mathematics*. The solution is:

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  4593
 20163
358691
695163
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1078610
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THE WHAT MARCH?

by Somtow Sucharitkul

art: Jack Gaughan

"What? You want me to write an *Isaac Asimov's Science Fiction Magazine March?*" I said, almost dropping the telephone into the piano.

"Why not?" George Scithers said. "After all, the *Washington Post* has one."

"Yes, but—"

"Such a march—in an arrangement for solo piano, say—could even be printed in the magazine. Readers all over the world could pull out their pianos and render it rousingly as they recall our tales of starships and alien worlds. Now, what would such a march have in it?"

"Well," I said, improvising wildly, "first there'd have to be a brilliant, heroic, fanfarish sort of a theme. Then, I suppose, an exotic,

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sensuous alien-princess sort of theme would come in for contrast. Then there'd be sort of an evil-is-lurking interlude followed by a dogfight in which the themes are developed, followed by a climactic recapitulation of the super-heroic theme."

"Isn't that just like, say, *Star Wars?*" said George.

"Yeah, but I'd do it all in five minutes' music. Just hypothetically, of course—"

"Hypothetical my foot. When can you deliver it?"

Perhaps he isn't joking, I thought for a crazy moment. "I don't know. Maybe in a couple of weeks."

"You're hired."

That was a year ago. . . .

To tell the truth, I had more than several qualms about writing the *Asimarch*. For one thing, it isn't in the usual run of the music I write; never, to my knowledge, has the school of neo-Asian post-serialism come up with even a single march, let alone a science-fictive one. But after a while I realized that George was asking me, in effect, to try to uncover just what it is that might make a march feel science-fictional, and to produce, by way of illustration, an example of this genre.

Well, to begin with, this isn't science fiction music at all.

Music of the future probably won't be much like anything we're hearing right now, any more than today's music—from the proliferation of isms in academic modern music to the blandishments of Muzak in fast food restaurants—is anything like a florid baroque aria for castrato and continuo, for instance. Those who say "But ah, whatever changes may come, melody, meter, and harmony will still persist," are usually suffering either from cultural chauvinism or from lack of knowledge. In Western music, the good old C major chord—to some the root of all music—was still considered a pretty horrid dissonance back in the fourteenth century, and many Indian musicians will say that Western music has no rhythm at all—however complex you may think it is, it's dull as a funeral march to them, while your ears may bend in half trying to catch the subtle distinctions between those teeny fractions of semitones that are so important to them.

Yes, but there are *cycles*, SF writers will say, and so will pop a contemporary style of music right into the middle of some weird culture. But since when has art of any period *really* resembled that of a previous one? There are no cycles as such, although there may be spirals.

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The purpose of this digression was to warn you that the piece of music attached to this article isn't, in any sense, music of the future, or some kind of extrapolation. That may or may not be the subject of some later article, but not here. Instead, I have been giving some thought to something far less sublime and academic—the science fictional theme tune.

And what kind of music is that?

To answer that, I thought about the movies. I thought about the music in science fiction movies, and about its antecedents—the music in big epics of the fifties and earlier, and the music of costume adventures (they wear different costumes in the SF movies, but the plots haven't changed much) all the way back to the music of the High- and Late-Romantic composers: Wagner, Mahler, Richard Strauss in particular.

Music in movies is always conservative, but SF movie music seems particularly so. In its joyous pulpiness it harks back to sea-pirates and Roman legions, and ultimately (having suffered some dilution in the process) to valkyries and other operatic wonders.

Then there's this archetypal adventure movie theme.

It's very simple: two long notes (tonic and dominant, doh and sol if you think in those terms), a triplet, another long note:

Dah—dah—di-di-di-dah—!

Do you recognize this? Some variants of this basic pattern divide the second *dah* into two shorter notes:

Dah—dah—dum-di-di-di-dah—!

Or they may do this to the first of the *dahs*:

Dum-di-dah—di-di-di-dah—!

But the general shape is unchanged. Here we have the outline of, for instance, two of John Williams's big themes, the *Star Wars* theme and the *Superman* theme. But also themes from movies as divergent as *Lawrence of Arabia* and *Born Free*. Say this magic formula to yourself and you will instantly be transported to a soundstage in Hollywood.

Actually, in the *Star Wars* theme, John Williams rings a remarkable change on the pattern. As non-technically as I can explain it, he delays the **di-di-di** so that it falls *on* the beat instead of being a lead in to the beat, and this turns the final **dah—** into a syncopation. This may sound trivial and fussy, but in its own way it is a stroke of genius, imbuing a rather familiarly patterned melody with a new kind of propulsive *oomph*.

Well, of course, any space-operatic march worth its salt had to

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open with some form of this archetypal theme. For some months I brooded on this, trying to come up with one that hadn't already appeared in some movie and yet would at the same time distill the essence of *all* SF movies.

Well. . . .

In the ensuing pages you will find my solutions to the enigma propounded to me by the Editor of this magazine. You will note that the music is dotted with footnotes: (A), (B), and so on. In a radical departure from tradition, I will now proceed to the footnotes and I suggest that you read them before rushing to your pianos.

(A) *The Fanfare.* Every march should have a nice grand fanfare, and so away we go.

(B) This passage of descending major chords is an oblique reference to the "spooky music" they used to have when the scene shifted to a starfield full of asteroids and nebulae and usually a dozen Saturns; ultimately a third-hand dilution of such music as Holst's *The Planets Suite.*

(C) *Generalized Superhero Theme.* This follows the pattern described above.

(C-1) Obligatory flattened-seventh modal harmony in opening phrase of superhero theme: cf. *Star Wars, Star Trek—The Motion Picture,* dozens of others. Inherited from the Roman epic and the Western.

(D) *Exotic Alien Princess Theme.* All right, so this is really a march, but I couldn't resist putting in one of these. If you're at the piano, don't linger romantically over this part, whatever the temptation, or you'll lose the sweep of the music; play through it in one soaring, yearning rush of tempestuous vigor. Every space opera has one of these, and for this one I went all the way back to the style of Late-Romantic opera.

(E) *Obligatory Hordes of Evil.* By time-honored tradition, "good" is represented by stalwart, major-key, diatonic themes, while "evil" must make do with twisted chord changings and tortuous chromaticisms. This theme resonates with those scenes in the old serials where the hero is tied to a stake, dangling over a pot of boiling oil, about to be sliced by a deadly atomic ray, etc. A chilling dread enters the listener's heart at this point. Note that the forces-of-evil motif is, in fact, loosely adapted from the superheroic theme. Is the villain, then, a concretization of the hero's dark side, a shadow-hero? In writing this kind of thing one should always plant a few gems for

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the academics to dig out, thus ensuring that one will be immortalized in some obscure journal somewhere.

(F) *Conflict!* The superhero theme returns in the minor, to be rebutted savagely by the forces-of-evil theme.

(G) The battle intensifies.

(H) *Redemption by Love.* Thoughts of the exotic princess stir in our hero's head, no doubt spurring him on to greater feats of valor.

(I) *Triumph!* The hero's theme returns in a grand recapitulation.

(J) Glancing reference to the princess—the first three notes of her theme.

(K) Distant rumbling of evil forces: the obligatory "I shall return" line that leaves room for a sequel.

(L) Final Chord.

That's it! I hope you had fun. I tried to arrange it so that a moderately gifted pianist (not a virtuoso) could handle it fairly easily. If you had trouble, practise, practise, practise!

And for the conductors among our readers, I am planning a nifty orchestral arrangement and perhaps a band arrangement too. Write to me (16 Ancell Street, Alexandria VA 22305) for details, or watch for an announcement in the letters column of this magazine. . . .

Oh, and if you happen to be a film producer and you're doing an SF picture and need some music (not necessarily of the neo-Asian post-serialist school) you might try the same address.

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THE ISAAC ASIMOV'S SCIENCE FICTION MAGAZINE MARCH

by Somtow Sucharitkul

Alla Marcia

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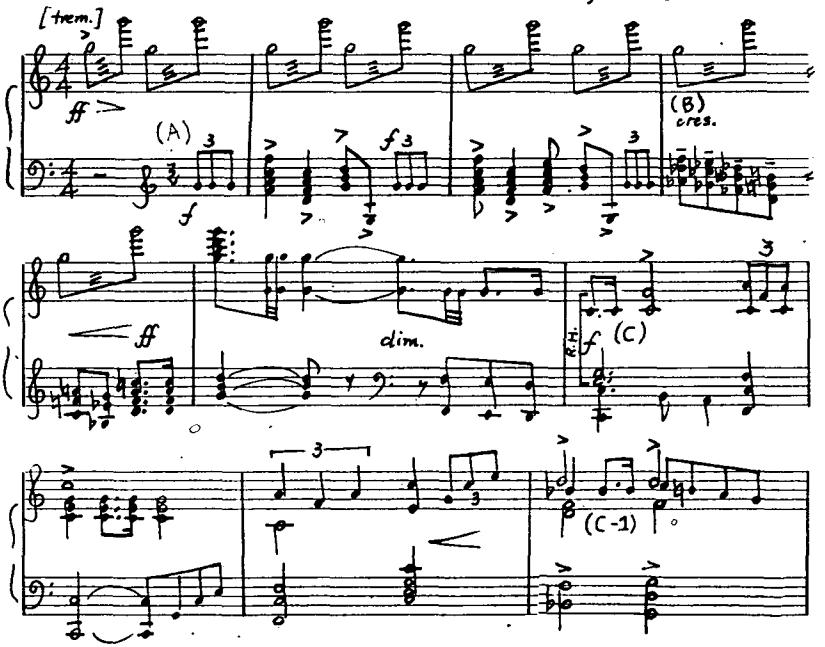
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8va

con pedale

8va

dim.

p

cres.

mf

R.H

cres.

sf

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ff mf sf (E) sf dim. mp sf cres. sf cres. f sf f f (F) f mf [quasi echo] p f

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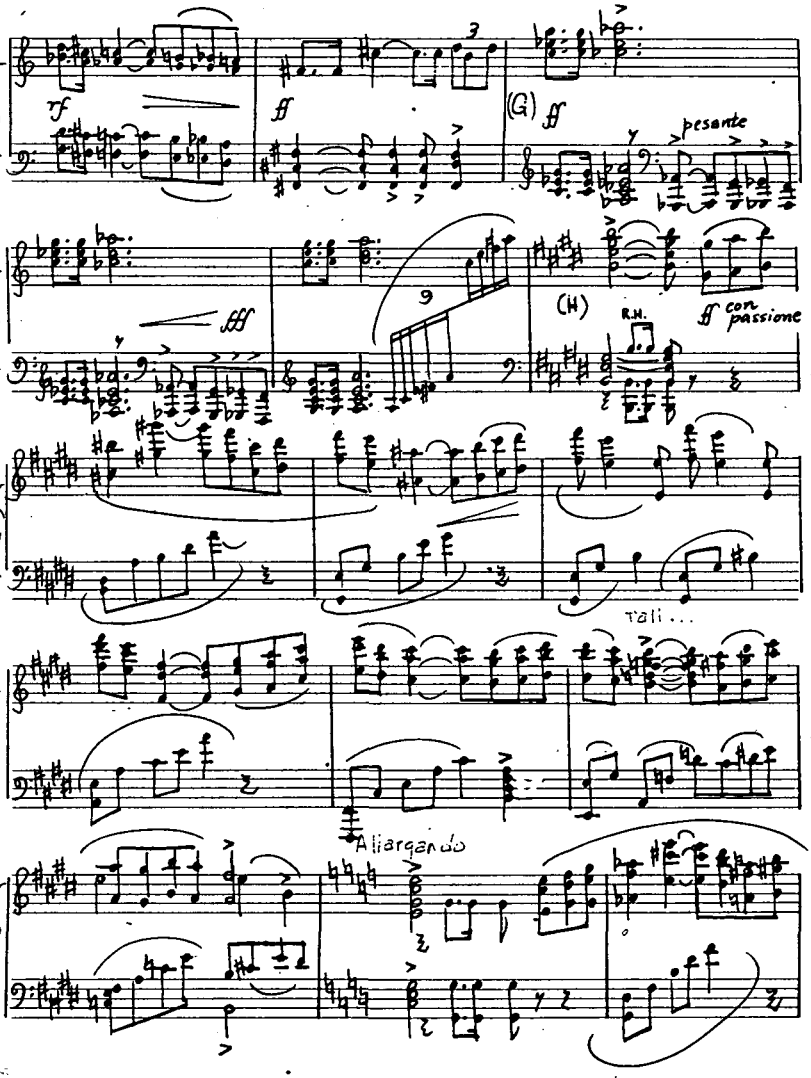
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THROUGH TIME & SPACE WITH

FERDINAND FEGHOOT X!!!

by Grendel Briarton

art: Tim Kirk

These—ah—Things are always illustrated by Mr. Kirk, an artist who lives in southern California and works for Walt Disney Productions, designing rides.

For years, Ferdinand Feghoot maintained an affectionate relationship with Mrs. Pigafetta, a middle-aged Sicilian mermaid who kept a *penzione* for shipwrecked sailors on an island near Taranto. On summer evenings, they sat together at the door of her commodious waterside cavern, singing sentimental operatic arias.

Then once, on arriving, he found her in tears. "*Cherubino mio*," she sobbed, "today I cannot sing, even for you. Inflation destroys me—yes, even here on my island! How shall I pay for my pasta, bologna, red wine, to feed the poor sailors the sea brings to me?"

Feghoot thought for a moment. "You have another cavern under this, don't you? Below sea level? You've told me that fish are very intelligent. Why not rent it to them? They could pay you with pearls, or with small fish for your table."

"Never!" she cried. "The great greedy flat fish would move in at once—manta rays, sting-rays, the rest! They would eat up my profits. I would have to put up a sign to prevent them. Then my sailors would say, 'You board fish in the basement—this is a disorderly house!' They would all swim away."

"Not if you put up a sign they're used to, *cara mia*, one that doesn't seem to apply to any kind of a fish."

"Can there be such?" She flicked tears away with her tail.

"No Skate-Boarding," said Ferdinand Feghoot.

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LIKE THE GENTLE RAINS

by
Joel Rosenberg

art: Leo Summers

This is the author's "third first sale," which he hastens to explain: one non-fiction piece in The New York Times, *a science fiction story to a magazine that ceased publication before publishing it, and now this. One may conclude that persistence is rewarded. In any case, we expect to see more of his work in the future. He is a member of Haven, a writing workshop based in New Haven, whose members include* IA'sf *contributors Mark McGarry and Kevin O'Donnell, Jr. He is working on a novel,* Ties of Blood and Silver.

I hated the Dutchman at first sight. "An officer is a model of courtesy and politeness, to subordinate officers as well as superiors"—it says so, right on the first page of *Contact Service Rules, Regulations, and Proprieties.*

"You the tin god Stan Morrissey sent me?"

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Space aboard Major Alonzo Norfeldt's cabin was mainly lacking. And the atmosphere wasn't improved by the stench of cheap wine mixed with the nauseating smell of stale tobacco. The fat little man was no visual thrill as he lay back on the rumpled linen of his bunk, scratching at his belly, just above the waistband of his shorts. If he had bathed in the past week, there was no solid evidence.

"Second Lieutenant Emile von du Mark, reporting to the Team Leader as per Regulation—"

He cut me off with thump of his hand against the nearest wall. "Listen, *Mister*: I don't want you quoting regs at me. Regardless of how disreputable I look—or *am*—you remember two things." He held up a stubby finger. "One, I'm a damn good Contact Team Leader. Two," another finger, "I'm your superior officer. Is that understood?"

"Yes, sir."

He sat up and wiped at his eyes with the back of a hand. "Just siddown. Please." He grunted, and gave a quick longing look at the corked bottle beside his bed before regretfully returning his attention to me. "What do they call you?"

"Emile, sir." I don't mind nicknames for other people, but any contraction of, or variation on my name grates.

"You heard of me?" He reached under his pillow, brought out a well-chewed cigar, and stuck the soggy end in his mouth.

"Yes, sir." I wanted to leave it at that, but he pressed.

"And what have you heard, Mister von du Mark?" A vague smile played across his lips; a childhood memory of my cat playing with a captured baby mole sprang up.

"That you are a competent—"

"None of that. I asked what you heard."

I shrugged. To hell with him, too. "That you are a tyrannical, overbearing CT leader, with a record of four good, solid contacts—and two Drops—but an incredibly high fatality rate among your teams' members. That you are a drunkard, and a smoker—both of which are obvious. That you may be an officer, but you certainly are no gentleman. Sir."

The Dutchman threw back his head and laughed. "You got guts, Mark." He stuck out his hand; I accepted it automatically. I returned his pressure quickly enough to prevent him cracking my knuckles. Barely.

"How'd you get stuck with me?" Norfeldt released my hand, and fished around on the floor for his lighter, quickly bringing his cigar to life, and blowing a foul cloud of smoke in my direction.

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"When I graduated, the Commandant—"

"Stan Morrissey. Old classmate of mine."

"So he told me. General Morrissey offered me a staff job, said he figured I was too inexperienced to go out on First Assignment just yet."

Norfeldt shook his massive head, several of his chins waggling in syncopation. "You shoulda listened. Breaks old Stan's heart, sending green kids out every year, seeing what comes back. You look a little like his son. Maybe that's why he wanted to give you a break. Why didn't he hold you back for another year at Alton?"

"I was third in my class. Sir." And damn proud of it, too. I'd worked hard for four years at Alton. And then on Graduation Day, for the Commandant to call me into his office and ask me to accept a staff post . . .

"Big deal." The Dutchman dismissed four years of backbreaking and mindbending work with an airy wave. "First Assignment is the real graduation, Emmy." He snickered at my wince, then changed the subject. "You psi-neg?"

I started to bring a hand up, to point at the See-No-Evil-Speak-No-Evil-Hear-No-Evil patch above my left shirt pocket, then caught myself. If he couldn't see for himself . . . "Yes, sir. And fully conditioned. Sir." Not that I know a whole lot about how Gates work, but what little I do know can't be pried out of me by bribe or threat. Or psi: to an esper with his eyes closed, I'm not even there.

"Yeah. I got the Three Monkeys myself."

Which was obvious. A Team Leader has to be psi-neg. The most common problem espers in the Service have is adopting the frame of reference of contactees—dangerous, since we are supposed to protect humanity's interests. We don't need another Xeno War, and if we have one, it *damn* well better be farther from a draw than the last one.

"Then I better tell you this before we go on down to the Rec to brief Buchholtz and McCaw. This planet we're going on to as Third Team has huge deposits of germanium. That mean anything to you?"

I *wanted* to answer, to say that I knew that germanium was the only metal that grabfields could get enough of a hold on, to squeeze into quantum black holes, the *sine qua non* of Gates. But I couldn't. I didn't *know* that he was psi-neg. And I didn't *know* that we couldn't be overheard.

"Nothing in particular, sir."

He smiled, and nodded. "Just checking. C'mon; you might as well meet the rest of the team."

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Magellan was a heavy cruiser, which was nice for us, not so nice for the Navy crew. Since Contact Service personnel are always quarantined from the start of a mission—water, food, and comm—it meant that we had the lower deck all to ourselves. The crew must have been using their bunks in shifts.

"Captain Aristotle McCaw, this is Emmy Mark." The tall redhead turned from the chessboard, not noticing my wince at what obviously was to be the Dutchman's nickname for me. "Lieutenant. Good to have you with us." McCaw nodded, his head bobbing on top of his long neck like an apple stuck on the end of a thin wire. He must have been a full two meters tall, weighing only about sixty kilos. I fancied I could see his ribs through his shirt.

Even sitting, his eyes were on the same level as the Dutchman's. "Briefing?"

"In a minute, Ari." Norfeldt turned to me. "Ari's our Comm Officer; high psi rating. And he's good—when I can get him to pay attention to the real world."

McCaw didn't answer. He probably didn't hear; his attention was directed to his next move.

Norfeldt pointed his uppermost chin at the lieutenant sitting across the table from McCaw, who was waiting for McCaw to move, like a leopard waiting for a gazelle to wander under its tree. "Kurt Buchholtz. Weapons Officer."

Buchholtz looked up at me, turning slightly in his chair like a tank turret zeroing in on a target. There was a flash of discomfort in his face as he sized me up, then obviously decided that he could take me, if need be. He was probably right; while I was a bit taller, he outweighed me by a good ten kilos—not an ounce of it fat.

"Never mess with Kurt, Emmy. Kurt's good, did a bang-up job of covering my escape on Epsilon Eridani IV—and managed to get himself aboard the scout before I had to take off, to blow the Gate." Norfeldt relit his cigar, and puffed some smoke first in my direction, then McCaw's. Not at Buchholtz. "And we got a tough one coming up."

Both of the men looked up, McCaw obviously irritated at being brought back to the real world, Buchholtz smiling broadly.

"I'll make it short. You can go over the reports later—I'll clear it with the scout's computer.

"Ramscoop Theta Twelve, about a year ago, dropped a hole in a grabfield around this F5." Norfeldt didn't tell us *what* F5 star it was; none of us needed to know. Maybe he didn't know, either. The acceleration algorithms for the return would be programmed into

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our scout's computer; we didn't need to know them, either. "First Team went through, via SolGate, built the Gate around the singularity on the other side.

"They found a live one, out at about two AUs—surface will be brighter than home. First did a pole-to-pole orbital sweep, got some good pictures. There's one indigenous, apparently intelligent species; they look vaguely amphibian. Technology about late Iron Age. Small cities, no evidence of warfare—any kind."

Buchholtz didn't look disappointed, which surprised me. Then it occured to me that he must have faith in the Dutchman's description of the mission as a tough one.

Norfeldt puffed at his cigar. "So Second Team went in. No apparent trouble, no fatalities. The scout and crew returned to SolGate relatively intact."

"Relatively?" If I was an esper, I know I would have heard Buchholtz inventorying the team's weapons.

Norfeldt shook his head. "The ship was fine. But under psych testing on the SolGate side, three of the four Second Team members were . . . changed."

"How?" I'm sure McCaw didn't care; he was just asking out of a vague sense of obligation to participate.

"Don't know. As soon as their escort's computer latched onto that fact, the skipper of the escort opened fire. A bit too quick on the trigger. I would have liked to know exactly what happened to them."

Buchholtz shrugged. "Should be easy. All we have to do is blow up the Gate on the other side, no? Looks like a clear Drop."

Norfeldt pulled out a chair, swung it around and sat down ass-backward, resting his forearms on the back. He looked Buchholtz directly in the face. "*No*, Kurt. We don't Drop this one, unless we absolutely have to." Norfeldt gave me a meaningful sideways glance. It takes two dozen tons of germanium, squeezed into a hole, to make the basis of a Gate, and the germanium is *not* recoverable.

"Siddown, Emmy. You got that, too?"

I had no problem with that. I didn't want my First Assignment to end in a Drop. "Yes, sir. But if we have to . . ."

"Then we have to. Don't bother me with the obvious." Norfeldt paused. "One more thing. The escort ship, the one that blew up Second Team's scout?"

Buchholtz nodded. "*Magellan*?"

"Right."

If I live to be a hundred—unlikely, given my line of work—I'll

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never get used to Gate travel. Back at the Academy, they used to explain that the nausea most people feel when they fly through a Gate is purely psychosomatic.

Nonsense. Humans weren't meant to be squeezed through to the other side of the singularity left behind when a quantum black hole evaporates. But maybe there's something to the psychosomatic argument, at that. Knowing that an error of less than a thousandth-degree in angle of insertion or a couple of centimeters per second too much or too little speed, and you'll end up coming out of some other singularity than the one you aimed for—probably inside a stellar-mass black hole—well, that isn't very good for digestion.

To make a long story short, I never looked at the screen as we approached SolGate, and our scout's computer put us into precisely the right insertion-flight; I had my eyes closed, vomiting up food that I didn't even remember swallowing.

"You about done puking your guts out?" Norfeldt's hands were confident and sure as he ripped the bag's tapes from my cheeks, replacing the bag with a fresh one.

"C'mon, kid—we're through, already. Take a look at a new sky."

Cautiously, I pried an eye open, and looked at the screen in front of my couch. Stars, that was all. I couldn't make out any familiar patterns, but that wasn't unexpected: in the three hundred years that we've been sending ramscoops out to seed other suns with the makings of Gates, some of them have gotten far from home.

"What do you think? Don't you feel somehow different, Emmy, being under another sky, where no more than ten other humans have been before?"

I looked back at Norfeldt. "Not really."

He laughed, and clapped a hand to my shoulder. "Like I said, maybe you got possibilities." He leaned over the panel, and punched a flashing square button, then sat back in his couch, pulled a fresh cigar out of his pocket, lit it. The Dutchman clasped his hands over his ample belly. At least he was wearing clothes that once could have been called a uniform. "Kurt, Ari—feel free to break out the chessboard. We got two weeks 'til we hit dirt."

"Everybody got their bubbles on?" Another thing I hated about the Dutchman was his apparent passionate desire to ignore the obvious.

"I'd rather be wearing armor." Buchholtz tugged at the rubber seal that made his inflated membrane helmet tight to the skin of his neck.

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I didn't blame him; I'd rather have been wearing full combat armor, too. But, no doubt, for different reasons. *I* would want it for my own protection, not for the added weaponry. The pistol at my waist was enough for me.

"Don't worry about it. I don't want to make us too difficult to kill—that'd solve the problem, easy. No Fourth Team; *Magellan* would just fly through, drop a bomb to take out the Gate, and fly back before it went off."

Great.

"I'm ready, too, Major." That made up a good five percent of the words McCaw had spoken since I'd known him.

The air outside the scout was hot, just not hot enough to require suits. Which made the job easier, at least in one sense. Unlikely as it was that any of the local bugs could bite us, if they *could*, that would "solve the problem," too.

There are times when I wish I'd gone to work for my father.

As blasé as I was trying to be, there was *something* about being on a new world. The bounce in my walk as we left the scout behind us couldn't be accounted for just by the planet's low gravity. After three weeks in freefall, I should have been dragging.

"Kurt." The Dutchman's voice sounded distant; the thin air didn't conduct sound well.

"Peeling off, Major." Buchholtz quickly jogged away, to our left, carrying his rifle in one hand, his pistol in the other. He was moving quickly across the plain; probably he would reach the stand of trees before we would.

"Contact, Major." McCaw didn't sound bored, for once. "They are about a quarter klick ahead, in those columnar vegetable growths."

"Trees, Ari, *trees*."

For once, I sympathized with Norfeldt. What else do you call tall, three-lobed plants, covered with what looked like purple moss?

"Major, I *like* them."

I shot a look at McCaw, then caught myself. No, he wasn't armed, of course. Comm Officers are *never* armed. You can't trust an esper who is supposed to open himself to empathic communication with aliens.

"So you like them. Big deal; let's go meet the natives."

I heard a click as Buchholtz switched his communicator on, and then a crackling hiss. Damn, the F5 was putting out enough RF to interfere with FM.

"Got them in my sights, Major." I could barely make out his words through the interference. But Buchholtz's eagerness came through

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loud and clear.

"You fire on my signal or death *only*—you got that, Kurt?" Norfeldt liked repeating himself; he had only given Buchholtz and me those orders a scant couple of dozen times.

"Got it."

The Dutchman stopped the three of us about twenty meters from the sharp edge of the forest with a sudden, chopping gesture of his left hand.

"Ari, just translate. No interpretation."

Three aliens walked out of a hole in the wall of trees, and stood facing McCaw, as though Norfeldt and I simply weren't there.

They were erect, bipedal creatures, tall and almost comically thin. Their purplish skin looked slick, but not wet. I could understand how First Team could describe them as amphibian, but we look more like lemurs than they resemble salamanders. The orange splotches on their naked skin *could* have been natural pigmentation, I suppose, but the uniformity of the pattern seemed to suggest that it was caused by dyes.

"They are . . . powerful, Major." I could barely hear McCaw. While Norfeldt was closer, he must have been having trouble hearing him, too; he reached over and flicked a switch on the captain's belt.

"Just translate for me—and them, Ari. Easy, now."

McCaw was trembling all over like a scared puppy.

"They say: 'Greetings. We are the . . .' untranslatable, it's their species name. Overtones of justice, and power, such power, Major. 'What that we have, do, or are, it is yours.' "

"Ritual greeting?"

"No, Major. There's no trace of that. They are waiting for a response from me, or Buchholtz."

"Just you two?"

"Wait." McCaw's trembling worsened, then ceased for a moment. "They don't see you and Mark as people, just objects. The one on our left, the leader, is expressing admiration at my species' ability to create complicated . . . toys."

Norfeldt chuckled. "Don't clarify matters for them. Have they seen other toys like me and Emmy before?"

" 'Yes. We admired greatly the toy that your . . . associates brought before. This time you have brought two. Is one a gift?' "

"Translate: What if it isn't?"

"Confusion. They don't understand the concept of not giving someone what he wants. They keep asking me to explain it another way."

I flipped the hammerguard off of my pistol; Norfeldt caught the

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motion out of the corner of his eye.

"At ease, Mister. We're all expendable—you most of all of us."

Which is why I'd flipped the guard off in the first place. I don't like being expendable. "Yes, sir."

"Relax, Emmy, I don't think I'll have to—" Norfeldt was cut off by a scream.

"It's Kurt! Emmy, *move*. I'll stay here with Ari. Find him."

"On my way." That was unnecessary; I was already sprinting for the area where Buchholtz had entered the forest, several hundred meters to our left.

In five minutes, I was standing over what was left of him.

"Report, Mark, dammit *report*."

"Screaming won't help, Major. Buchholtz is dead. It looks like he's been clawed to death. You see any weapons on your natives?"

"No."

"None on these, either. There's five—no, six—bodies scattered around the clearing." Buchholtz had given them a good fight. Trails of blood leading out into the forest showed that it had taken more than these six to take Buchholtz.

I stooped to check his weapons. "His rifle's empty, pistol has one slug left. And his knife's bloody. He made the bastards pay, Major."

"Don't give with the bravado, kid. Just keep your head on. May be some injured ones, some survivors around. Lessee if we can't survive this one." The Dutchman just kept talking. I don't know whether it was to reassure me, or him. "C'mon back now. Take it easy, Emmy. Deep breaths."

McCaw's voice cut in. He wasn't talking to me or Norfeldt, I'm sure. "Thank you. Please. If you could . . ."

Norfeldt's voice was suddenly calm, even. "Not back here, Emmy. Meet me back at the scout. If I don't make it, make damn sure you Drop this one.

"One thing." I could hear him swallow, several times. "Take a look at Kurt's face."

"Right."

"Is he smiling?"

Through the blood, he was. I couldn't understand it. "Yeah."

"So's McCaw. And he's dead, too."

"Lesson time, Emmy." Norfeldt's hands were again folded over his belly, as he sat back in his couch, puffing away at his cigar. I'm not criticizing; there wasn't a damn thing to do until we reached the Gate.

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"None of that crap, Major. We blew it. It's going to be a Drop."

The Dutchman shrugged, and blew a cloud of smoke at the exhaust above his head. "You're right—but why?"

"*Because they kill espers*. It's the only explanation. Both Buchholtz and McCaw were psi-positive. Both died. We didn't."

"Don't be stupid. Think about it. The Second Team didn't die, and all except the Team Leader were espers—not just slightly positive, like Kurt. Well, to be accurate, they didn't die there," he waved his chins at the screen, "they died back on our side. How much do you want to bet that the only team member who didn't change his psych profile was the leader?"

"I don't understand. Wait! They didn't think of you and me as people."

"You're beginning to get it, Emmy." Norfeldt chuckled. "We learned enough down there, just enough to work it out. Remember the greeting that the leader of the aliens gave McCaw?"

"Something like 'We'll give you whatever you want,' no?"

"Close enough. Tell me: what do you think Buchholtz wanted, more than anything else in the world?"

I sat back and thought on that for a while. No rush, no rush at all, damn it. Nothing I could say or think of now would bring either of them back.

"Maybe . . . maybe Buchholtz wanted to die in combat."

"That was Kurt. If you had eyes in your head, you would have caught that from the moment you met him. Kurt wanted to die gloriously, in battle final. He was a *Götterdämerung*, looking for a place to happen. The natives gave him that place."

"And McCaw?"

"C'mon, kid, it's obvious. Ari was always bored with the real world. They gave him that way out." He rubbed a hand across his face. "Did they just kill him, or . . . ? Guess we'll never know." Norfeldt shrugged, and spun his couch around to face me. "Somehow or other, they've developed an esper society, based on giving everyone what he wants. That's their idea of justice."

"So we don't have to Drop! We don't have to blow up the Gate."

Norfeldt's pistol was suddenly in his hand. "*Yes*, we do. And you're not going to stop me, Emmy. It's not what I'd prefer to do. If I had my way, we'd bring *Magellan* back through, blow that ball of dirt to pieces. But there's no way I can count on that. We'll have to take the chance of them developing Gate travel, someday."

"I don't understand."

"That's 'cause you're still a child. Those folks down there operate

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from a strict sense of justice—a strange style, but justice." He shook his head, sadly. "Ever ask anyone, back at the Academy, why all Contact Service people are officers? No enlisted, why?"

I quoted from memory. "Page two, paragraph seventeen: 'The responsibilities of each and every member of the Contact Service are of the—' "

"No. It's because we're not military, Emmy—we're cops.

"Go ask a cop sometime, kid. Ask him whether he thinks people need justice . . . or mercy."

WHISPERING GALLERIES

I was there when the silvered bird
turned yet another eccentric turn
over the shadow-pocked mountains
and pewter wastes.

I was there when the egg dropped,
riding a candle flicker,
into the rushing, expanding maelstrom
of jagged images.

I was there as the boat rocked
and beached itself cleanly,
a noiseless sigh,
on the most foreign of shores.

I was there in the dog days
of late July with Armstrong
as he planted his clumsy boot
in the static, glassine dust of the Moon.

I was there; and will trespass minds no more
until we again search the whispering galleries
of the night wilderness above.
All else pales.

—Robert Frazier

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IMPROBABLE BESTIARY: The Hollow-Earthers

The Earth has holes at both its Poles,
And in the land between them
There dwells a race from Inner Space
(No mortal man has seen them).
In grim patrols they guard their holes
And let no humans enter;
Like ghastly trolls, bereft of souls,
They lurk in Terra's center.

Beware the Hollow-Earthers! Beware the troglodytes!
They make their homes in catacombs, and prowl on
moonless nights . . .
They kidnap helpless children, they steal the babes at birth,
And make them slaves inside the caves of hellish Hollow-Earth . . .

No man who's faced the Arctic waste
And fought the savage frost there
Has found the hole beneath the Pole.
(God help the man who's *lost* there!)
The Eskimos claim no-one knows
The tunnel's point of entry.
And yet they swear the hole is *there*,
Complete with loathsome sentry.

Beware the Hollow-Earthers! They dwell in lumps of clay!
Like fiendish moles they leave their holes and stalk their
human prey . . .
Don't let them know you're out there! Run home for all
you're worth!
Take care to flee if you should see the fiends from
Hollow-Earth . . .

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Some hardy soul must reach the Pole
(Equipped with charts and data)
And find, up there, the creatures' lair
Beneath the polar strata.
Some day, no doubt, we'll wipe them out
By ending our reliance
On ancient myth, and siding with
The tools of modern science.

Destroy the Hollow-Earthers! Let nightmares melt away!
Like motes of dust, it seems they must avoid the light of day!
Avoid such fiends in future, and grant them wider berth . . .
I'd rather see reality; who needs a Hollow-Earth?

—F. Gwynplaine MacIntyre

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THE REVELATION

OF CLEO

by Tom Fristoe

art: Gary Freeman

Mr. Fristoe was born forty years ago on April Fool's day; he claims he has always tried to live up to this auspicious beginning. He has had dozens of different jobs, some more legal than others, ranging from psychological research assistant to leathersmith. For the moment, he manages a toy store in San

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Leandro CA, where he lives with five parakeets, four finches, three diamond doves, an Amazon parrot, a Patagonian conure, two Great Danes, a Borzoi, two children, and a wife who is—fortunately—a veterinary technician. And yes, this is the author's first sale.

Cleo made a quick visual check behind her. Was that a face at one of the upstairs windows? Nah, just a curtain. The boss would be in his office, anyway, on the other side of the house. He was spending all his time there these days—never even came out for air.

She kicked in the electric motor which powered her rear wheels and crept slowly down the driveway, not quite able to suppress a giggle at the thought of the fun she was going to have. Already, she could almost feel the sensual throb of the big, six-cylinder diesel and feel her front tires clawing at the pavement.

She would run Bleeker Road up and over the mountain to Twin Forks, follow the river down for a few miles, and come back on Rt. 415. It shouldn't take more than twenty-five minutes, if she kept her speed up. The boss would never even know she was gone.

Nothing that she could remember in her former life, when she was fully human, had been half as much fun as just getting out on her own and running. It was the only time she felt truly free.

Actually, she had some trouble remembering her former life at all, beyond a few isolated images. The bio-surgeons had done that to her at the time of her transformation, so that she wouldn't pine for what she had been—just as they had given her a terror of leaving the estate without a passenger inside.

Well, screw them, it wouldn't work. Gradually, she was putting it all together—who she had been, what she had looked like, where she had lived, and for how long. The only thing that still eluded her was her name, and sooner or later she would figure that out too—just like she had figured out how to escape whenever she wanted to. She was a human being, a strong and beautiful woman, even if she did look like an automobile at the moment. They had no right to keep her trapped. She picked up a little speed and headed for the twin pillars that marked the way out.

Cleo was expecting the terror which flooded her a hundred meters before the main gate. She had experienced it before—but that didn't mean she was ready for it. There, simply, was no way to get ready. It was too intense for that.

Something was waiting for her out there, she knew, just out of

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sight around the curve. And if she came any closer it would get her. It was huge and foul and leathery—and she didn't want to know what it was.

In the back of her mind, Cleo knew it wasn't real, that the fear had been conditioned into her. But her bearings felt all dry and gritty, and some vital part of her circuitry seemed to be burning out. Her engine kept slowing down, and she had to concentrate to keep her speed up.

She forced herself to think about the real danger of what she was doing—that she would get caught. Then, most likely, they would make her over into something stationary, like a desk, or part of an assembly line. She didn't think she could stand that. She would never be able to see her boss again, and he would never realize how much she loved him. Or, most frightening of all, they might not ever let her return to her real body, the long-legged, red-haired one that lay frozen in Fort Jackson, waiting for her. She tried to recall where Fort Jackson was, but gave it up. It was impossible to think. Whatever the cost, she had to be free, if only for a few minutes. She kept on going.

Almost to the gate now, Cleo could barely control her panic. Her brakes began to clamp down of their own accord, tighter and tighter. Her vision blurred and her speed slowed to a crawl. She was almost blind. It took all her willpower to continue.

When she reached the point where she could stand it no longer, Cleo turned off into the flowerbed beside the driveway. She was close enough. As soon as she was headed even slightly away from the gate, Cleo's fear eased up and her vision began to return. She looked behind her to make sure she was aimed in the right direction.

Cleo locked up her front brakes, tight as she could, and applied full power to her rear wheels, slinging a huge rooster tail of dirt and sand out onto the road. Now, in a couple of minutes, when she hit that patch of sand at forty clicks, it wouldn't matter that her brakes would be locked tight and that she would be blinded; she would just slide right on through—but, God, was it scary.

"Cleo." It sounded like the voice of God himself, pealing across the manicured lawns. "Just what in the Hell do you think you're doing?"

Oh shit, the boss. That must have been his face in the window after all. "Nowhere . . . I mean nothing," she blurted. "I thought I felt a little slippage in the linkage, or something," she continued in her most long-legged, red-headed voice. "I was just checking it out."

"Get over here—right now."

Oh great, I'm really in trouble now. . . . She purred across the

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lawn and stopped beneath the window where he stood, glaring down at her. Handsome son-of-a-bitch, she thought; and *son-of-a-bitch* was definitely the right word. It gave her chills when he looked at her like that.

"Were you planning to go somewhere?" His voice was horribly soft. Cleo felt a shudder run through her frame.

"No, honest, I really wasn't. I mean, I wouldn't have been gone long. I was coming right back. Please don't . . ." She stopped herself. This was degrading. He would do to her whatever he decided to do, but she wasn't going to beg.

"Well, it looks as though I'm going to have to . . ."

Cleo waited for him to continue. Then she looked towards where he was staring. A long, black limousine was pulling up the drive.

"Get to the garage," he said, tightly. "I'll deal with you later." Then he was gone from the window. She could have sworn that he looked frightened.

Grateful for the reprieve, Cleo scooted toward the garage. Behind her, she watched the limo, gliding to a stop beside the pillared front door. It looked fast, she thought, probably a male imprint. The real screamers usually were; but then the selection committee was, no doubt, mostly male.

Before she rounded the corner which would hide the front of the house from her, Cleo slowed down to watch a conservatively dressed young woman get out of the car and stride up to the door. There was something strange about her, something familiar which Cleo couldn't quite place. She had seen that woman before—knew her from someplace. Puzzling, Cleo continued around the corner.

Halfway into the garage, she slammed on her brakes. *That was her*—her own body, the one that lay frozen solid in Fort Jackson, waiting for her term of employment to be over. That woman was herself.

It couldn't possibly be true—could it? She spun around to the front of the house again, bounced across the shrubbery and up to the big, picture window, crushing several small pine trees.

It was her all right. She had seen that face too often in the mirror to have any doubt. Right now it was grim and determined, and below it, a slim fingered hand was holding a small, snub-nosed, automatic pistol, pointed at the boss. He definitely looked frightened now.

"No," Cleo screamed, lurching forward to crash into the wall below the window. She didn't hear the gun go off, but the boss stopped looking scared and looked puzzled for just a second before he toppled over.

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The lady swung the gun around, pointed it at Cleo, and fired again. This time Cleo both heard and felt the shot. Almost before she realized what she was doing, she had zoomed backwards around the corner. She wasn't seriously hurt, having taken the shot in her top, right above the windscreen. But she was in quite a bit of pain.

Still moving, she fired up the diesel which powered her front wheels, cursing the sadistic bastard who had decided that the best way to prevent a servant from damaging the equipment she was installed in was to provide it with pain receptors.

The diesel caught hold, and all four wheels clawed at the slick grass. This direction would take her to the back of the property, where she would be trapped if the lady decided to chase her.

The lady? That lady was her. What was going on? Had someone stolen her body, or did she have a secret twin that she had never heard of?

She heard the limo's engine start and roar off. It sounded as if it was leaving through the main gate. She couldn't let them get away. She had to find out who it was that looked so much like her.

Cleo felt stunned. She didn't know whether she should try to follow the other car or try to help the boss—but she did know that she had to do something. She raced around to the front of the house and bounced across the shrubbery again to the front window. The boss still lay where he had fallen, with a dark pool spreading out from under him. There didn't seem much doubt that he was dead.

She had killed him—someone who looked exactly like her, who might even *be* her. She had to find out. She couldn't let her get away.

Cleo spun around and fishtailed across the front lawn towards the main gate. As she approached it, the usual panic rose up in her, but she was already so scared that it hardly seemed to make any difference. When her vision quit, she kept going; when her brakes locked up, she slid.

There was a sudden stab of pain, and she knew that she had clipped one of the gate posts with a front fender. Then a wheel dropped and jammed, and she felt herself rolling over. She had been going too fast, and had slid all the way across the road and into the ditch. She still couldn't see, but she could feel herself turn all the way over once and land on her wheels again. It hurt something awful.

She sat there a few moments, gathering her senses, while her vision gradually returned and her brakes unlocked themselves. As far as she could tell, she wasn't seriously hurt, though her fender was mangled pretty badly and her top was dented in. A little ex-

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perimentation proved that she could still run as well as ever, though something was wrong with the way she handled. She must have bent something in her front end.

No matter, it couldn't stop her. She tore down the mountain road after the black limousine, not knowing whether she could catch it, or what would happen if she did, but knowing that she had to try.

It was no use. Fast as she could run, the limo was faster. Each time she would come upon a straight section of road, she would see it up ahead, and each time it was further away. Soon, she knew, she wouldn't be able to see it at all—and when she got to the bottom, where the road branched out, it would be gone, with nothing to tell her which direction it had taken. Somehow, she had to close the gap, but how?

Suddenly she knew—if only she could do it. There was a particular curve, a switchback, which she had driven past many times. She had even fantasized doing what she was about to attempt.

When she reached the curve, she pulled hard to the left, off the road, and headed straight down the side of the mountain. She could feel her springs bottoming out, could feel her tires scraping the insides of her fender wells with every bump. If her luck held, if there were no ditches or fallen trees in her path, she might just make it—though she had absolutely no idea what she would do if she caught the other car. She had no weapons of any kind.

Ahead of her, through the trees, she could catch glimpses of pavement, glistening black. The road was wet and slippery here in the shadow of the mountain. She was going to have a hard time stopping if and when she got there.

Then she saw it. The black limo was just pulling around the corner below her, tires squealing, rear end hanging out, almost sliding over the edge of the road. Beyond it, there was nothing but the tops of trees, several hundred feet below.

She was going too fast. She could see that she was going to overshoot the road—and end up a pile of twisted metal. She locked up her brakes, but it didn't seem to help. She steered to the right, trying to aim for the other car. If she was going to die, at least she could take them with her. Then her front wheels plowed into soft earth and she slowed drastically. She might just make it.

Cleo shot out over the cut of the embankment with all four wheels locked up. She crashed down to the pavement in the middle of the road, and slid sideways, directly in front of the speeding limousine. Her tires dug in and she rose up on two wheels, at the very edge of the cliff. She was going to roll over. She knew it.

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For a second she teetered there, balanced. Below her, she could see in precise detail the jagged rocks and trees where she was going to hit. Then she rocked back and bounced down on her wheels. The other car was almost on her.

There was a frantic screech of rubber as the limo attempted to decide its own fate, and then a crash. It had slammed into a large boulder on the high side of the road.

Steam rose from its hood, as the lady crawled out the now-broken window. The car didn't move. It looked like it might have fractured its brain compartment. But the lady was still trying to get away.

First she tried to scramble up the embankment, but it was too steep and too soft to climb. She slid back and started down the hill, to where the bank was lower, but Cleo roared down a few feet and cut her off. The woman reversed direction and headed uphill, but again Cleo blocked her. Finally she stopped and leaned, wild-eyed and panting, against the raw dirt of the embankment. Cleo nosed right up against her belly and braked, pinning her against the bank, and looked up at her. That was her own face all right, distorted with fear. Cleo had trouble believing it, but it was.

"Who are you?"

The lady looked at Cleo for a long minute. Then she laughed, a short, bitter laugh, almost a sob. "I'm you," she said, "at least I'm who you think you are." She laughed again, but it didn't sound much like laughter. "I guess you could say I'm who you never were."

Cleo almost killed her right there. Both her engines raced. All she had to do was to drop in the clutch and she would crush this lying, murderous bitch against the embankment. But she hesitated, and the lady continued.

"I know you loved him. All of you loved him. He made sure of that—all his machinery loved him. It was his method of control. Everyone wanted to please . . . everything . . . But that's because I loved him, and you're all me."

"What in the Hell are you talking about?"

"You think you used to be me—right? Well, his kitchen thinks it used to be me. His gardener remembers the same past life that you do, such as it is. Even his desk—his goddamn, automated, computerized desk thinks that it was a human being a couple of years ago . . . and thinks it will be one again. And all of you—"

"Shut up," Cleo screamed. Her engine RPM was rising to an alarming pitch. "Do you think I wouldn't know? Do you think we don't talk to each other—us machines?" Actually, she only talked to the gardener, and not too much at that. Their interests were so differ-

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ent. . . . But didn't that prove it? They were different. "Believe me, I would know."

The woman had to scream to make herself heard over the roar of Cleo's engine. "How would you know? You can't even talk about it. Who are you? Go on, tell me who you are."

Cleo's engine cut suddenly to an idle. "I'm . . ." but there were no words. They simply wouldn't come. All she had were images—hazy memories that couldn't be put into language. There was a flash of herself in a white dress, that faded away as soon as she tried to focus on it. Once she had been at the beach, talking to some people—but that too faded away. Her body, where was her body being stored? Suddenly she couldn't even remember that.

"All right then, how long do you have to go? How long before he changes you back? Surely you know that; you must be counting the days."

Cleo backed up a little, unpinning the woman, but still ready. "I don't know," she said. "I never thought about it."

The woman was shaking now, leaning back against the dirt of the embankment, with shudder after shudder running through her. "I thought it would be fun," she said, "to have something of my personality all around us. He made it sound so fine, such a compliment—proof of his love . . . but it was so twisted."

"You're crazy," Cleo said, but without conviction. Something within her recognized the truth, as though she had known it all along. Her memories had always felt as though they belonged to someone else.

"No . . . no, I'm not crazy, but he is . . . was. I don't even know if he's dead. I didn't have time to make sure. . . . He's evil. He likes to torture things—people, machines, it doesn't matter, as long as they are able to feel pain.

"You had figured out how to get away—off the estate, I mean."

"Obviously," Cleo said, "I'm here, aren't I?"

"No, I mean the last time. That's why he killed you. You had learned how to escape him."

"I'm not dead," Cleo told her. The woman was crazy after all. It was something of a relief to realize it.

"You were before—twice. How many miles have you driven—ten, maybe twenty thousand?"

"Yeah, something like that."

"Your odometer shows over fifty thousand. Did you ever wonder about that?"

"It can't be," Cleo said, but she checked her instrument panel, and

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it was true. Why had she never . . .

"Of course you never noticed," the woman continued. "He programmed you so that you wouldn't notice. You're the third time around for this brain. Twice before, you learned how to escape from him; and, twice before, he erased you—murdered you. Goddamnit, do you understand, he murdered you just because you could get away from him. It's the one thing he cannot stand."

"I'm not dead," Cleo shouted. "You stupid bitch, I'm right here in front of you."

But the woman didn't seem to hear. "He made me watch," she said, "both times—so that I would never try it, I guess. I was one of his possessions too; and he would have done the same thing to me, one way or another.

"He put you up on blocks, so that you couldn't move, and he rigged a drain to your power source, so that you slowly began to die. Then he told you what . . ." Her voice broke. ". . . what I just told you, what you are. And he explained how you were going to get weaker and weaker until you died. Then he just left you there.

"Every day he forced me to go out to the garage with him, while he checked your progress, and lectured you about what a terrible crime it was to escape and how you were going to die for it." She took a deep breath. "Do you want to hear more? There is more. He made you beg—and he laughed at you.

"When . . . it was over, he reprogrammed you, exactly the way you were before. And when it happened again, I couldn't stand it. I sneaked out one night and tried to disconnect the power drain. But I did something wrong, and you died right away. That was better. Don't you think that was better?"

There was so much pain in the question that Cleo automatically reassured her, "Yes, it was better."

"Anyway, I had to get away then too. But I knew he would find me sooner or later. So I had to come back and kill him."

Cleo stared at her. "I think I almost believe you." She thought of his face, the way it had looked when he discovered her at the gate—gloating. "It *is* true, isn't it."

The green eyes, that until now had been Cleo's own, spilled over with tears. "Yes," said the voice that was no longer Cleo's, "yes, God help us both, it's true."

The woman sat down then on the side of the road by the cut of the embankment, and Cleo looked down at her. In the distance was the faint sound of sirens, winding their way up the road.

Cleo hesitated for just a moment, then she swung open her pas-

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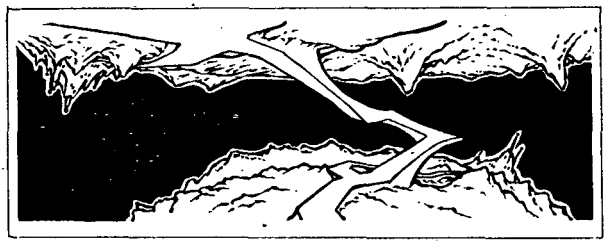
senger door. "Get in," she said. "I think it's time we were getting out of here. I know another way down."

The woman struggled to her feet and slid inside. Cleo slammed the door behind her and locked it. "Maybe we could be sisters," she said; and they roared off down the mountain.



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ORIGIN

by Timothy Zahn

art: George Barr

Mr. Zahn, now 29, is a full-time SF writer. His hobbies include reading, listening to classical music, and (new this year) expectant-parenting. "Origin" is his first sale to IA'sfm; *but he's sold stories to* Analog, F & SF, Amazing, *and others. He also claims that the racing armadillo tour down where he lives is controlled by a big syndicate which discourages independents.*

The tiny ship's control blister was silent except for the whine of a computer's bubble-array drive running at full speed. Wiping the layer of sweat from his forehead, Kevn Jakoby sat next to his partner, resisting the urge to look out the port again. The alien starship that had overtaken them wasn't likely to look any smaller.

"Should be about done." Rolf Sawyer's voice was carefully casual.

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"You think feeding them our linguistics package will really do any good?"

Kevn shrugged. "They're bound to have bigger computers on that thing than we do. And if they *can't* work up a translator, we're no worse off than we were."

The whine cut off abruptly, and for five heartbeats there was silence. Then the comm speaker came to life.

"Greetings," a lilting voice said. "I am Fal-sint. Who and what are you?"

Wordlessly, Rolf handed Kevn the mike. Grimacing, the other cleared his throat. "I'm Kevn Jakoby; my partner is Rolf Sawyer. We're humans, prospecting in this region of space."

"Are you creators or creatures?"

"Uh . . . creatures, I guess."

"Who is your creator?"

Kevn blinked. "No one. We evolved naturally, by ourselves. That's what *creature* means."

"Not true. If you are creatures then you were created. That is simple definition."

Rolf nudged him. "Ask him what *he* is," he suggested in a low voice. "Maybe he's got a strange definition for 'creator,' too."

Kevn nodded and asked the question. "I am a creature of the Varka series, designed to serve as a star patroller."

The light dawned. "You're a computer, aren't you? An artificial intelligence." Already Kevn was feeling better about all this. "Well, by *that* definition we're creators."

"In that event we should not speak directly together. Please send one of your creatures across to negotiate your interests."

"Hold on. One of *our* creatures? To *negotiate?*"

"Certainly."

The sinking feeling was coming back. "We haven't got anything like that with us," he said cautiously.

"My facilities are available, if you need to build one," Fal-sint offered.

"I'm not sure that would help. . . ." Kevn trailed off.

"You stated you were creators. I presume you are aware of the penalties for posing falsely as a creator?"

Rolf took the mike. "Our *race* knows how to create artificial intelligences," he said. "But our particular specialty's different. Can all of *your* creator's people make machines like you?"

"Yes," Fal-sint said flatly. "If they couldn't, they wouldn't be creators."

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"That was a big help," Kevn muttered, retrieving the mike from his partner. "Fal-sint? Look, why don't we just go and meet your creator? I'm sure we can straighten this out with him."

"Impossible. Creators speak to one another through their creatures, not directly. *And* you have not yet proven yourselves creators."

"Well, let's just forget the whole thing, then." Kevn was losing patience. "We'll be around, if your creator ever decides to come down off his cloud." He hit the pre-ignition switch . . . and a red light winked on. "Rolf?"

"I'm on it." Rolf had the outside monitor going through its paces. "Oh, hell. Our pal here has run big chunks of something up against the drive nozzles. They can't fire till they're clear."

"You may not yet leave." There was a new note of firmness to Fal-sint's lilt. "If you are creators, I must learn which side of the Conflict you stand on; if you are creatures, I must learn the stand of your creator."

"We don't know anything about any Conflict!" Kevn yelled. "And if we did we'd probably be neutrals. Come on, let us go!"

"I perceive you are agitated. You may have time to compose yourself before we continue." There was a soft click and the speaker went silent.

Kevn snorted with frustration. "Damn machine!"

"There's never a Patrol ship around when you need one," Rolf muttered. "What're we going to do?"

"Hell, *I* don't know." Kevn laced his fingers behind his head and stared glumly at the control panel. "You suppose there's any way to escape?"

"Naw. That plug of his is just overkill—we already know his ship's faster than ours. Probably armed, too." Rolf snapped his fingers. "Hey! Maybe we could accept his offer of a machine shop and build *us* some weapons."

"Right under his nose? How dumb do you think he is? Besides, I don't think leaving the ship's a good idea."

"Nuts," Rolf growled. "Why the big deal about whether we're creators or not, anyway?"

"You heard him—there's some kind of war going on out here, probably with robots doing most of the fighting. *What* we are is probably their best indicator as to how dangerous—or useful—we are."

"Why? Oh, right: if you can build good robots it doesn't matter how useless you otherwise are."

"And if you're a good or a bad robot it says something about your

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creator."

"So why don't they just give us a test? Ask some questions or something?"

"Like what? What can you ask an artificial intelligence that'll distinguish it from a real one? The only question I can think of is the one they're asking: where did you come from."

"Aha!" Rolf slapped the arm of his chair. "Kevn, we're dopes. We're *biological!*" He grabbed the mike. "Fal-sint?"

"Yes? Are you prepared to resume?"

"You bet. Look, unlike you, we're made of organic, carbon-oxygen molecules. No electronics, no machining—not even any metals, except in trace amounts."

"Yes. And?"

Rolf's triumph evaporated. "What do you mean, 'And?' It proves we're creators!"

"Not true. I know of forty-seven biologic creature-series. My own creator himself has two."

Rolf looked helplessly at Kevn. "I'm out of ideas."

"Maybe I'm not." Kevn took a deep breath, mentally crossing his fingers. "Very well. Fal-sint, you have passed our creator's test." He hoped fervently the other would accept that statement without awkward questions. "We may now admit to be creatures."

"You have proof?" Fal-sint didn't seem angry at the shift in Kevn's story.

"Yes." Kevn accessed a section of the computer's literature array. "Read here, starting where it says, 'So God created man in His own image.' "

There was a short pause, and Kevn held his breath. Then Fal-sint spoke. "Yes; I see now. Your creator is indeed powerful. I will send word to my creator at once."

Grinning, Kevn winked at Rolf. "Fine. Now, perhaps we creatures can discuss some areas of mutual interest. This Conflict of yours, for instance; and the location of any nearby metal-rich planets."

"I'm afraid not. While we normally would do so, my creator will definitely wish to speak directly to one as powerful as yours. Please communicate with your creator and ask where he would prefer such a meeting take place."

Kevn stared at Rolf. "What do we do *now?*" he hissed.

Rolf shrugged helplessly. "There's never a priest around when you need one," he muttered.

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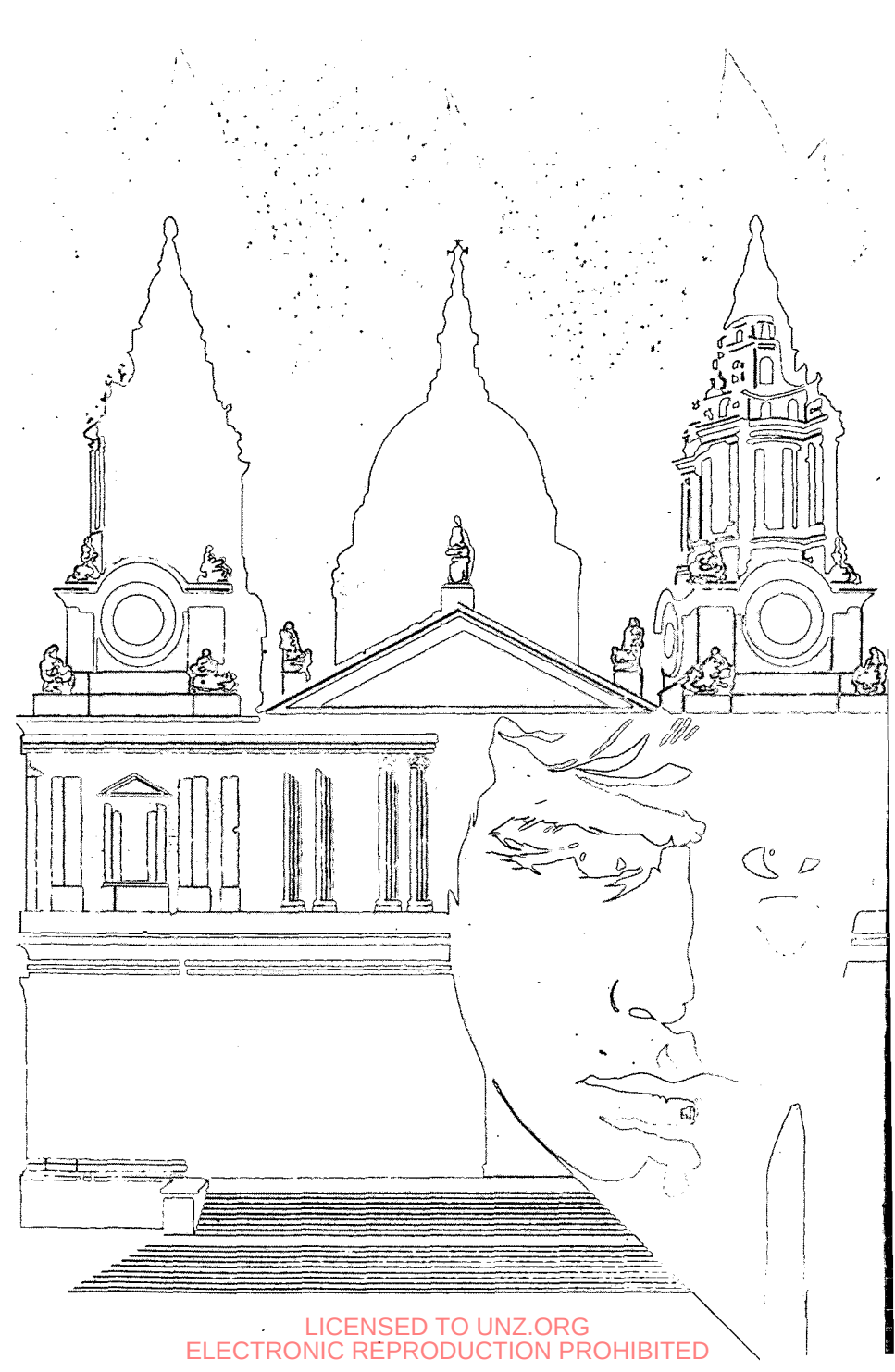

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FIRE WATCH

by Connie Willis

art: James Odbert

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Mrs. Willis has been trying to convince people for years that she is just an ordinary suburban housewife. She has the bulldog, the twelve-year-old daughter, and the physics-teacher husband to prove it; she lives in a little mountain town, sings in the choir, and tries to keep a low profile. Unfortunately, whenever she opens her mouth, she blows her cover; and all the soap-opera-watching and cookie-baking can't repair the damage. On the other hand, none of the writers she knows will believe that she bakes cookies or watches soap operas, so there's a credibility gap on all sides.

"History hath triumphed over time, which besides it nothing but eternity hath triumphed over."

—Sir Walter Raleigh

September 20—Of course the first thing I looked for was the fire-watch stone. And of course it wasn't there yet. It wasn't dedicated until 1951, accompanying speech by the Very Reverend Dean Walter Matthews, and this is only 1940. I knew that. I went to see the fire-watch stone only yesterday, with some kind of misplaced notion that seeing the scene of the crime would somehow help. It didn't.

The only things that would have helped were a crash course in London during the Blitz and a little more time. I had not gotten either.

"Travelling in time is not like taking the tube, Mr. Bartholomew," the esteemed Dunworthy had said, blinking at me through those antique spectacles of his. "Either you report on the twentieth or you don't go at all."

"But I'm not ready," I'd said. "Look, it took me four years to get ready to travel with St. Paul. *St. Paul.* Not St. Paul's. You can't expect me to get ready for London in the Blitz in two days."

"Yes," Dunworthy had said. "We can." End of conversation.

"Two days!" I had shouted at my roommate Kivrin. "All because some computer adds an apostrophe **s**. And the esteemed Dunworthy doesn't even bat an eye when I tell him. 'Time travel is not like taking the tube, young man,' he says. 'I'd suggest you get ready. You're leaving day after tomorrow.' The man's a total incompetent."

"No," she said. "He isn't. He's the best there is. He wrote the book

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on St. Paul's. Maybe you should listen to what he says."

I had expected Kivrin to be at least a little sympathetic. She had been practically hysterical when she got her practicum changed from fifteenth to fourteenth century England, and how did either century qualify as a practicum? Even counting infectious diseases they couldn't have been more than a five. The Blitz is an eight, and St. Paul's itself is, with my luck, a ten.

"You think I should go see Dunworthy again?" I said.

"Yes."

"And then what? I've got two days. I don't know the money, the language, the history. Nothing."

"He's a good man," Kivrin said. "I think you'd better listen to him while you can." Good old Kivrin. Always the sympathetic ear.

The good man was responsible for my standing just inside the propped-open west doors, gawking like the country boy I was supposed to be, looking for a stone that wasn't there. Thanks to the good man, I was about as unprepared for my practicum as it was possible for him to make me.

I couldn't see more than a few feet into the church. I could see a candle gleaming feebly a long way off and a closer blur of white moving toward me. A verger, or possibly the Very Reverend Dean himself. I pulled out the letter from my clergyman uncle in Wales that was supposed to gain me access to the Dean, and patted my back pocket to make sure I hadn't lost the microfiche *Oxford English Dictionary, Revised, with Historical Supplements,* I'd smuggled out of the Bodleian. I couldn't pull it out in the middle of the conversation, but with luck I could muddle through the first encounter by context and look up the words I didn't know later.

"Are you from the ayarpee?" he said. He was no older than I am, a head shorter and much thinner. Almost ascetic looking. He reminded me of Kivrin. He was not wearing white, but clutching it to his chest. In other circumstances I would have thought it was a pillow. In other circumstances I would know what was being said to me, but there had been no time to unlearn sub-Mediterranean Latin and Jewish law and learn Cockney and air-raid procedures. Two days, and the esteemed Dunworthy, who wanted to talk about the sacred burdens of the historian instead of telling me what the ayarpee was.

"Are you?" he demanded again.

I considered shipping out the *OED* after all on the grounds that Wales was a foreign country, but I didn't think they had microfilm in 1940. Ayarpee. It could be anything, including a nickname for

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the fire watch, in which case the impulse to say no was not safe at all. "No," I said.

He lunged suddenly toward and past me and peered out the open doors. "Damn," he said, coming back to me. "Where are they then? Bunch of lazy bourgeois tarts!" And so much for getting by on context.

He looked at me closely, suspiciously, as if he thought I was only pretending not to be with the ayarpee. "The church is closed," he said finally.

I held up the envelope and said, "My name's Bartholomew. Is Dean Matthews in?"

He looked out the door a moment longer, as if he expected the lazy bourgeois tarts at any moment and intended to attack them with the white bundle, then he turned and said, as if he were guiding a tour, "This way, please," and took off into the gloom.

He led me to the right and down the south aisle of the nave. Thank God I had memorized the floor plan or at that moment, heading into total darkness, led by a raving verger, the whole bizarre metaphor of my situation would have been enough to send me out the west doors and back to St. John's Wood. It helped a little to know where I was. We should have been passing number twenty-six: Hunt's painting of "The Light of the World"—Jesus with his lantern—but it was too dark to see it. We could have used the lantern ourselves.

He stopped abruptly ahead of me, still raving. "We weren't asking for the bloody Savoy, just a few cots. Nelson's better off than we are—at least he's got a pillow provided." He brandished the white bundle like a torch in the darkness. It was a pillow after all. "We asked for them over a fortnight ago, and here we still are, sleeping on the bleeding generals from Trafalgar because those bitches want to play tea and crumpets with the tommies at Victoria and the Hell with us!"

He didn't seem to expect me to answer his outburst, which was good, because I had understood perhaps one key word in three. He stomped on ahead, moving out of sight of the one pathetic altar candle and stopping again at a black hole. Number twenty-five: stairs to the Whispering Gallery, the Dome, the library (not open to the public). Up the stairs, down a hall, stop again at a medieval door and knock. "I've got to go wait for them," he said. "If I'm not there they'll likely take them over to the Abbey. Tell the Dean to ring them up again, will you?" and he took off down the stone steps, still holding his pillow like a shield against him.

He had knocked, but the door was at least a foot of solid oak, and

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it was obvious the Very Reverend Dean had not heard. I was going to have to knock again. Yes, well, and the man holding the pinpoint had to let go of it, too, but even knowing it will all be over in a moment and you won't feel a thing doesn't make it any easier to say, "Now!" So I stood in front of the door, cursing the history department and the esteemed Dunworthy and the computer that had made the mistake and brought me here to this dark door with only a letter from a fictitious uncle that I trusted no more than I trusted the rest of them.

Even the old reliable Bodleian had let me down. The batch of research stuff I cross-ordered through Balliol and the main terminal is probably sitting in my room right now, a century out of reach. And Kivrin, who had already done her practicum and should have been bursting with advice, walked around as silent as a saint until I begged her to help me.

"Did you go to see Dunworthy?" she said.

"Yes. You want to know what priceless bit of information he had for me? 'Silence and humility are the sacred burdens of the historian.' He also told me I would love St. Paul's. Golden gems from the master. Unfortunately, what I need to know are the times and places of the bombs so one doesn't fall on me." I flopped down on the bed. "Any suggestions?"

"How good are you at memory retrieval?" she said.

I sat up. "I'm pretty good. You think I should assimilate?"

"There isn't time for that," she said. "I think you should put everything you can directly into long-term."

"You mean endorphins?" I said.

The biggest problem with using memory-assistance drugs to put information into your long-term memory is that it never sits, even for a micro-second, in your short-term memory, and that makes retrieval complicated, not to mention unnerving. It gives you the most unsettling sense of *déjà vu* to suddenly know something you're positive you've never seen or heard before.

The main problem, though, is not eerie sensations but retrieval. Nobody knows exactly how the brain gets what it wants out of storage, but short-term is definitely involved. That brief, sometimes microscopic, time information spends in short-term is apparently used for something besides tip-of-the-tongue availability. The whole complex sort-and-file process of retrieval is apparently centered in short-term; and without it, and without the help of the drugs that put it there or artificial substitutes, information can be impossible to retrieve. I'd used endorphins for examinations and never had any

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difficulty with retrieval, and it looked like it was the only way to store all the information I needed in anything approaching the time I had left, but it also meant that I would *never* have known any of the things I needed to know, even for long enough to have forgotten them. If and when I could retrieve the information, I would know it. Till then I was as ignorant of it as if it were not stored in some cobwebbed corner of my mind at all.

"You can retrieve without artificials, can't you?" Kivrin said, looking skeptical.

"I guess I'll have to."

"Under stress? Without sleep? Low body endorphin levels?" What exactly had her practicum been? She had never said a word about it, and undergraduates are not supposed to ask. Stress factors in the Middle Ages? I thought everybody slept through them.

"I hope so," I said. "Anyway, I'm willing to try this idea if you think it will help."

She looked at me with that martyred expression and said, "Nothing will help." Thank you, St. Kivrin of Balliol.

But I tried it anyway. It was better than sitting in Dunworthy's rooms having him blink at me through his historically accurate eyeglasses and tell me I was going to love St. Paul's. When my Bodleian requests didn't come, I overloaded my credit and bought out Blackwell's. Tapes on World War II, Celtic literature, history of mass transit, tourist guidebooks, everything I could think of. Then I rented a high-speed recorder and shot up. When I came out of it, I was so panicked by the feeling of not knowing any more than I had when I started that I took the tube to London and raced up Ludgate Hill to see if the firewatch stone would trigger any memories. It didn't.

"Your endorphin levels aren't back to normal yet," I told myself and tried to relax, but that was impossible with the prospect of the practicum looming up before me. And those are real bullets, kid. Just because you're a history major doing his practicum doesn't mean you can't get killed. I read history books all the way home on the tube and right up until Dunworthy's flunkies came to take me to St. John's Wood this morning.

Then I jammed the microfiche *OED* in my back pocket and went off feeling as if I would have to survive by my native wit and hoping I could get hold of artificials in 1940. Surely I could get through the first day without mishap, I thought; and now here I was, stopped cold by almost the first word that was spoken to me.

Well, not quite. In spite of Kivrin's advice that I not put anything

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in short-term, I'd memorized the British money, a map of the tube system, a map of my own Oxford. It had gotten me this far. Surely I would be able to deal with the Dean.

Just as I had almost gotten up the courage to knock, he opened the door, and as with the pinpoint, it really was over quickly and without pain. I handed him my letter, and he shook my hand and said something understandable like, "Glad to have another man, Bartholomew." He looked strained and tired and as if he might collapse if I told him the Blitz had just started. I know, I know: Keep your mouth shut. The sacred silence, etc.

He said, "We'll get Langby to show you round, shall we?" I assumed that was my Verger of the Pillow, and I was right. He met us at the foot of the stairs, puffing a little but jubilant.

"The cots came," he said to Dean Matthews. "You'd have thought they were doing us a favor. All high heels and hoity-toity. 'You made us miss our tea, luv,' one of them said to me. 'Yes, well, and a good thing, too,' I said. 'You look as if you could stand to lose a stone or two.' "

Even Dean Matthews looked as though he did not completely understand him. He said, "Did you set them up in the crypt?" and then introduced us. "Mr. Bartholomew's just got in from Wales," he said. "He's come to join our volunteers." Volunteers, not fire watch.

Langby showed me around, pointing out various dimnesses in the general gloom and then dragged me down to see the ten folding canvas cots set up among the tombs in the crypt, also in passing Lord Nelson's black marble sarcophagus. He told me I didn't have to stand a watch the first night and suggested I go to bed, since sleep is the most precious commodity in the raids. I could well believe it. He was clutching that silly pillow to his breast like his beloved.

"Do you hear the sirens down here?" I asked, wondering if he buried his head in it.

He looked round at the low stone ceilings. "Some do, some don't. Brinton has to have his Horlich's. Bence-Jones would sleep if the roof fell in on him. I have to have a pillow. The important thing is to get your eight in no matter what. If you don't, you turn into one of the walking dead. And then you get killed."

On that cheering note he went off to post the watches for tonight, leaving his pillow on one of the cots with orders for me to let nobody touch it. So here I sit, waiting for my first air-raid siren and trying to get all this down before I turn into one of the walking or non-walking dead.

I've used the stolen *OED* to decipher a little Langby. Middling

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success. A tart is either a pastry or a prostitute (I assume the latter, although I was wrong about the pillow). Bourgeois is a catchall term for all the faults of the middle class. A Tommy's a soldier. Ayarpee I could not find under any spelling and I had nearly given up when something in long-term about the use of acronyms and abbreviations in wartime popped forward (bless you, St. Kivrin) and I realized it must be an abbreviation. ARP. Air Raid Precautions. Of course. Where else would you get the bleeding cots from?

September 21—Now that I'm past the first shock of being here, I realize that the history department neglected to tell me what I'm supposed to do in the three-odd months of this practicum. They handed me this journal, the letter from my uncle, and a ten-pound note, and sent me packing into the past. The ten pounds (already depleted by train and tube fares) is supposed to last me until the end of December and get me back to St. John's Wood for pickup when the second letter calling me back to Wales to sick uncle's bedside comes. Till then I live here in the crypt with Nelson, who, Langby tells me, is pickled in alcohol inside his coffin. If we take a direct hit, will he burn like a torch or simply trickle out in a decaying stream onto the crypt floor, I wonder. Board is provided by a gas ring, over which are cooked wretched tea and indescribable kippers. To pay for all this luxury I am to stand on the roofs of St. Paul's and put out incendiaries.

I must also accomplish the purpose of this practicum, whatever it may be. Right now the only purpose I care about is staying alive until the second letter from uncle arrives and I can go home.

I am doing makework until Langby has time to "show me the ropes." I've cleaned the skillet they cook the foul little fishes in, stacked wooden folding chairs at the altar end of the crypt (flat instead of standing because they tend to collapse like bombs in the middle of the night), and tried to sleep.

I am apparently not one of the lucky ones who can sleep through the raids. I spent most of the night wondering what St. Paul's risk rating is. Practica have to be at least a six. Last night I was convinced this was a ten, with the crypt as ground zero, and that I might as well have applied for Denver.

The most interesting thing that's happened so far is that I've seen a cat. I am fascinated, but trying not to appear so since they seem commonplace here.

September 22—Still in the crypt. Langby comes dashing through

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periodically cursing various government agencies (all abbreviated) and promising to take me up on the roofs. In the meantime, I've run out of makework and taught myself to work a stirrup pump. Kivrin was overly concerned about my memory retrieval abilities. I have not had any trouble so far. Quite the opposite. I called up fire-fighting information and got the whole manual with pictures, including instructions on the use of the stirrup pump. If the kippers set Lord Nelson on fire, I shall be a hero.

Excitement last night. The sirens went early and some of the chars who clean offices in the City sheltered in the crypt with us. One of them woke me out of a sound sleep, going like an air raid siren. Seems she'd seen a mouse. We had to go whacking at tombs and under the cots with a rubber boot to persuade her it was gone. Obviously what the history department had in mind: murdering mice.

September 24—Langby took me on rounds. Into the choir, where I had to learn the stirrup pump all over again, assigned rubber boots and a tin helmet. Langby says Commander Allen is getting us asbestos firemen's coats, but hasn't yet, so it's my own wool coat and muffler and very cold on the roofs even in September. It feels like November and looks it, too, bleak and cheerless with no sun. Up to the dome and onto the roofs which should be flat, but in fact are littered with towers, pinnacles, gutters, and statues, all designed expressly to catch and hold incendiaries out of reach. Shown how to smother an incendiary with sand before it burns through the roof and sets the church on fire. Shown the ropes (literally) lying in a heap at the base of the dome in case somebody has to go up one of the west towers or over the top of the dome. Back inside and down to the Whispering Gallery.

Langby kept up a running commentary through the whole tour, part practical instruction, part church history. Before we went up into the Gallery he dragged me over to the south door to tell me how Christopher Wren stood in the smoking rubble of Old St. Paul's and asked a workman to bring him a stone from the graveyard to mark the cornerstone. On the stone was written in Latin, "I shall rise again," and Wren was so impressed by the irony that he had the words inscribed above the door. Langby looked as smug as if he had not told me a story every first-year history student knows, but I suppose without the impact of the firewatch stone, the other is just a nice story.

Langby raced me up the steps and onto the narrow balcony circling

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the Whispering Gallery. He was already halfway round to the other side, shouting dimensions and acoustics at me. He stopped facing the wall opposite and said softly, "You can hear me whispering because of the shape of the dome. The sound waves are reinforced around the perimeter of the dome. It sounds like the very crack of doom up here during a raid. The dome is one hundred and seven feet across. It is eighty feet above the nave."

I looked down. The railing went out from under me and the black-and-white marble floor came up with dizzying speed. I hung onto something in front of me and dropped to my knees, staggered and sick at heart. The sun had come out, and all of St. Paul's seemed drenched in gold. Even the carved wood of the choir, the white stone pillars, the leaden pipes of the organ, all of it golden, golden.

Langby was beside me, trying to pull me free. "Bartholomew," he shouted, "What's wrong? For God's sake, man."

I knew I must tell him that if I let go, St. Paul's and all the past would fall in on me, and that I must not let that happen because I was an historian. I said something, but it was not what I intended because Langby merely tightened his grip. He hauled me violently free of the railing and back onto the stairway, then let me collapse limply on the steps and stood back from me, not speaking.

"I don't know what happened in there," I said. "I've never been afraid of heights before."

"You're shaking," he said sharply. "You'd better lie down." He led me back to the crypt.

September 25—Memory retrieval: ARP manual. Symptoms of bombing victims. Stage one—shock; stupefaction; unawareness of injuries; words may not make sense except to victim. Stage two—shivering; nausea; injuries, losses felt; return to reality. Stage three—talkativeness that cannot be controlled; desire to explain shock behavior to rescuers.

Langby must surely recognize the symptoms, but how does he account for the fact there was no bomb? I can hardly explain my shock behavior to him, and it isn't just the sacred silence of the historian that stops me.

He has not said anything, in fact assigned me my first watches for tomorrow night as if nothing had happened, and he seems no more preoccupied than anyone else. Everyone I've met so far is jittery (one thing I had in short-term was how calm everyone was during the raids) and the raids have not come near us since I got here. They've been mostly over the East End and the docks.

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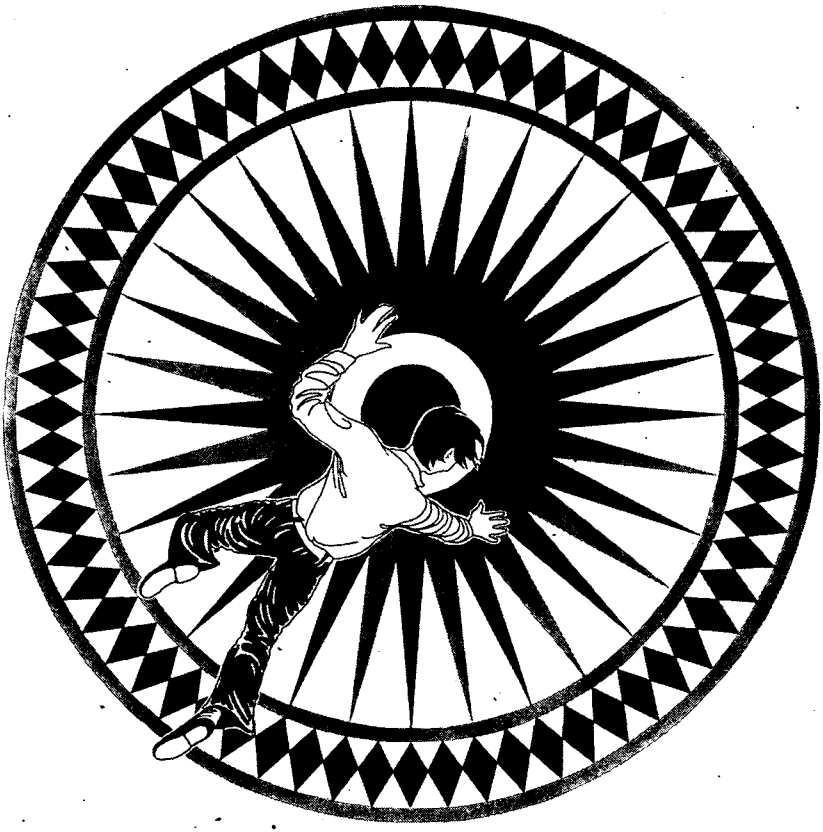

There was a reference tonight to a UXB, and I have been thinking about the Dean's manner and the church being closed when I'm almost sure I remember reading it was open through the entire Blitz. As soon as I get a chance, I'll try to retrieve the events of September. As to retrieving anything else, I don't see how I can hope to remember the right information until I know what it is I am supposed to do here, if anything.

There are no guidelines for historians, and no restrictions either. I could tell everyone I'm from the future if I thought they would believe me. I could murder Hitler if I could get to Germany. Or could I? Time paradox talk abounds in the history department, and the graduate students back from their practica don't say a word one way or the other. Is there a tough, immutable past? Or is there a new

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past every day and do we, the historians, make it? And what are the consequences of what we do, if there are consequences? And how do we dare do anything without knowing them? Must we interfere boldly, hoping we do not bring about all our downfalls? Or must we do nothing at all, not interfere, stand by and watch St. Paul's burn to the ground, if need be so that we don't change the future?

All those are fine questions for a late-night study session. They do not matter here. I could no more let St. Paul's burn down than I could kill Hitler. No, that is not true. I found that out yesterday in the Whispering Gallery. I could kill Hitler if I caught him setting fire to St. Paul's.

September 26—I met a young woman today. Dean Matthews has opened the church, so the watch have been doing duties as chars and people have started coming in again. The young woman reminded me of Kivrin, though Kivrin is a good deal taller and would never frizz her hair like that. She looked as if she had been crying. Kivrin has looked like that since she got back from her practicum. The Middle Ages were too much for her. I wonder how she would have coped with this. By pouring out her fears to the local priest, no doubt, as I sincerely hoped her lookalike was not going to do.

"May I help you?" I said, not wanting in the least to help. "I'm a volunteer."

She looked distressed. "You're not paid?" she said, and wiped at her reddened nose with a handkerchief. "I read about St. Paul's and the fire watch and all and I thought, perhaps there's a position there for me. In the canteen, like, or something. A paying position." There were tears in her red-rimmed eyes.

"I'm afraid we don't have a canteen," I said as kindly as I could, considering how impatient Kivrin always makes me, "and it's not actually a real shelter. Some of the watch sleep in the crypt. I'm afraid we're all volunteers, though."

"That won't do, then," she said. She dabbed at her eyes with the handkerchief. "I love St. Paul's, but I can't take on volunteer work, not with my little brother Tom back from the country." I was not reading this situation properly. For all the outward signs of distress, she sounded quite cheerful and no closer to tears than when she had come in. "I've got to get us a proper place to stay. With Tom back, we can't go on sleeping in the tubes."

A sudden feeling of dread, the kind of sharp pain you get sometimes from involuntary retrieval, went over me. "The tubes?" I said, trying to get at the memory.

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"Marble Arch, usually," she went on. "My brother Tom saves us a place early and I go—" She stopped, held the handkerchief close to her nose, and exploded into it. "I'm sorry," she said, "this awful cold!"

Red nose, watering eyes, sneezing. Respiratory infection. It was a wonder I hadn't told her not to cry. It's only by luck that I haven't made some unforgivable mistake so far, and this is not because I can't get at the long-term memory. I don't have half the information I need even stored: cats and colds and the way St. Paul's looks in full sun. It's only a matter of time before I am stopped cold by something I do not know. Nevertheless, I am going to try for retrieval tonight after I come off watch. At least I can find out whether and when something is going to fall on me.

I have seen the cat once or twice. He is coal-black with a white patch on his throat that looks as if it were painted on for the blackout.

September 27—I have just come down from the roofs. I am still shaking.

Early in the raid the bombing was mostly over the East End. The view was incredible. Searchlights everywhere, the sky pink from the fires and reflecting in the Thames, the exploding shells sparkling like fireworks. There was a constant, deafening thunder broken by the occasional droning of the planes high overhead, then the repeating stutter of the ack-ack guns.

About midnight the bombs began falling quite near with a horrible sound like a train running over me. It took every bit of will I had to keep from flinging myself flat on the roof, but Langby was watching. I didn't want to give him the satisfaction of watching a repeat performance of my behavior in the dome. I kept my head up and my sandbucket firmly in hand and felt quite proud of myself.

The bombs stopped roaring past about three, and there was a lull of about half an hour, and then a clatter like hail on the roofs. Everybody except Langby dived for shovels and stirrup pumps. He was watching me. And I was watching the incendiary.

It had fallen only a few meters from me, behind the clock tower. It was much smaller than I had imagined, only about thirty centimeters long. It was sputtering violently, throwing greenish-white fire almost to where I was standing. In a minute it would simmer down into a molten mass and begin to burn through the roof. Flames and the frantic shouts of firemen, and then the white rubble stretching for miles, and nothing, nothing left, not even the firewatch stone.

It was the Whispering Gallery all over again. I felt that I had said

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something, and when I looked at Langby's face he was smiling crookedly.

"St. Paul's will burn down," I said. "There won't be anything left."

"Yes," Langby said. "That's the idea, isn't it? Burn St. Paul's to the ground? Isn't that the plan?"

"Whose plan?" I said stupidly.

"Hitler's, of course," Langby said. "Who did you think I meant?" and, almost casually, picked up his stirrup pump.

The page of the ARP manual flashed suddenly before me. I poured the bucket of sand around the still sputtering bomb, snatched up another bucket and dumped that on top of it. Black smoke billowed up in such a cloud that I could hardly find my shovel. I felt for the smothered bomb with the tip of it and scooped it into the empty bucket, then shovelled the sand in on top of it. Tears were streaming down my face from the acrid smoke. I turned to wipe them on my sleeve and saw Langby.

He had not made a move to help me. He smiled. "It's not a bad plan, actually. But of course we won't let it happen. That's what the fire watch is here for. To see that it doesn't happen. Right, Bartholomew?"

I know now what the purpose of my practicum is. I must stop Langby from burning down St. Paul's.

September 28—I try to tell myself I was mistaken about Langby last night, that I misunderstood what he said. Why would he want to burn down St. Paul's unless he is a Nazi spy? How can a Nazi spy have gotten on the fire watch? I think about my faked letter of introduction and shudder.

How can I find out? If I set him some test, some fatal thing that only a loyal Englishman in 1940 would know, I fear I am the one who would be caught out. I *must* get my retrieval working properly.

Until then, I shall watch Langby. For the time being at least that should be easy. Langby has just posted the watches for the next two weeks. We stand every one together.

September 30—I know what happened in September. Langby told me.

Last night in the choir, putting on our coats and boots, he said, "They've already tried once, you know."

I had no idea what he meant. I felt as helpless as that first day when he asked me if I was from the ayarpee.

"The plan to destroy St. Paul's. They've already tried once. The

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tenth of September. A high explosive bomb. But of course you didn't know about that. You were in Wales."

I was not even listening. The minute he had said, "high explosive bomb," I had remembered it all. It had burrowed in under the road and lodged on the foundations. The bomb squad had tried to defuse it, but there was a leaking gas main. They decided to evacuate St. Paul's, but Dean Matthews refused to leave, and they got it out after all and exploded it in Barking Marshes. Instant and complete retrieval.

"The bomb squad saved her that time," Langby was saying. "It seems there's always somebody about."

"Yes," I said. "There is," and walked away from him.

October 1—I thought last night's retrieval of the events of September tenth meant some sort of breakthrough, but I have been lying here on my cot most of the night trying for Nazi spies in St. Paul's and getting nothing. Do I have to know exactly what I'm looking for before I can remember it? What good does that do me?

Maybe Langby is not a Nazi spy. Then what is he? An arsonist? A madman? The crypt is hardly conducive to thought, being not at all as silent as a tomb. The chars talk most of the night and the sound of the bombs is muffled, which somehow makes it worse. I find myself straining to hear them. When I did get to sleep this morning, I dreamed about one of the tube shelters being hit, broken mains, drowning people.

October 4—I tried to catch the cat today. I had some idea of persuading it to dispatch the mouse that has been terrifying the chars. I also wanted to see one up close. I took the water bucket I had used with the stirrup pump last night to put out some burning shrapnel from one of the anti-aircraft guns. It still had a bit of water in it, but not enough to drown the cat, and my plan was to clamp the bucket over him, reach under, and pick him up, then carry him down to the crypt and point him at the mouse. I did not even come close to him.

I swung the bucket, and as I did so, perhaps an inch of water splashed out. I thought I remembered that the cat was a domesticated animal, but I must have been wrong about that. The cat's wide complacent face pulled back into a skull-like mask that was absolutely terrifying, vicious claws extended from what I had thought were harmless paws, and the cat let out a sound to top the chars.

In my surprise I dropped the bucket and it rolled against one of

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the pillars. The cat disappeared. Behind me, Langby said, "That's no way to catch a cat."

"Obviously," I said, and bent to retrieve the bucket.

"Cats hate water," he said, still in that expressionless voice.

"Oh," I said, and started in front of him to take the bucket back to the choir. "I didn't know that."

"Everybody knows it. Even the stupid Welsh."

October 8—We have been standing double watches for a week—bomber's moon. Langby didn't show up on the roofs, so I went looking for him in the church. I found him standing by the west doors talking to an old man. The man had a newspaper tucked under his arm and he handed it to Langby, but Langby gave it back to him. When the man saw me, he ducked out. Langby said, "Tourist. Wanted to know where the Windmill Theater is. Read in the paper the girls are starkers."

I know I looked as if I didn't believe him because he said, "You look rotten, old man. Not getting enough sleep, are you? I'll get somebody to take the first watch for you tonight."

"No," I said coldly. "I'll stand my own watch. I like being on the roofs," and added silently, *where I can watch you.*

He shrugged and said, "I suppose it's better than being down in the crypt. At least on the roofs you can hear the one that gets you."

October 10—I thought the double watches might be good for me, take my mind off my inability to retrieve. The watched pot idea. Actually, it sometimes works. A few hours of thinking about something else, or a good night's sleep, and the fact pops forward without any prompting, without any artificials.

The good night's sleep is out of the question. Not only do the chars talk constantly, but the cat has moved into the crypt and sidles up to everyone, making siren noises and begging for kippers. I am moving my cot out of the transept and over by Nelson before I go on watch. He may be pickled, but he keeps his mouth shut.

October 11—I dreamed Trafalgar, ships' guns and smoke and falling plaster and Langby shouting my name. My first waking thought was that the folding chairs had gone off. I could not see for all the smoke.

"I'm coming," I said, limping toward Langby and pulling on my boots. There was a heap of plaster and tangled folding chairs in the transept. Langby was digging in it. "Bartholomew!" he shouted,

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flinging a chunk of plaster aside. "Bartholomew!"

I still had the idea it was smoke. I ran back for the stirrup pump and then knelt beside him and began pulling on a splintered chair back. It resisted, and it came to me suddenly, There is a body under here. I will reach for a piece of the ceiling and find it is a hand. I leaned back on my heels, determined not to be sick, then went at the pile again.

Langby was going far too fast, jabbing with a chair leg. I grabbed his hand to stop him, and he struggled against me as if I were a piece of rubble to be thrown aside. He picked up a large flat square of plaster, and under it was the floor. I turned and looked behind me. Both chars huddled in the recess by the altar. "Who are you looking for?" I said, keeping hold of Langby's arm.

"Bartholomew," he said, and swept the rubble aside, his hands bleeding through the coating of smoky dust.

"I'm here," I said. "I'm all right." I choked on the white dust. "I moved my cot out of the transept."

He turned sharply to the chars and then said quite calmly, "What's under here?"

"Only the gas ring," one of them said timidly from the shadowed recess, "and Mrs. Galbraith's pocketbook." He dug through the mess until he had found them both. The gas ring was leaking at a merry rate, though the flame had gone out.

"You've saved St. Paul's and me after all," I said, standing there in my underwear and boots, holding the useless stirrup pump. "We might all have been asphyxiated."

He stood up. "I shouldn't have saved you," he said.

Stage one: shock, stupefaction, unawareness of injuries, words may not make sense except to victim. He would not know his hand was bleeding yet. He would not remember what he had said. He had said he shouldn't have saved my life.

"I shouldn't have saved you," he repeated. "I have my duty to think of."

"You're bleeding," I said sharply. "You'd better lie down." I sounded just like Langby in the Gallery.

October 13—It was a high explosive bomb. It blew a hole in the choir roof; and some of the marble statuary is broken; but the ceiling of the crypt did not collapse, which is what I thought at first. It only jarred some plaster loose.

I do not think Langby has any idea what he said. That should give me some sort of advantage, now that I am sure where the danger

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lies, now that I am sure it will not come crashing down from some other direction. But what good is all this knowing, when I do not know what he will do? Or when?

Surely I have the facts of yesterday's bomb in long-term, but even falling plaster did not jar them loose this time. I am not even trying for retrieval now. I lie in the darkness waiting for the roof to fall in on me. And remembering how Langby saved my life.

October 15—The girl came in again today. She still has the cold, but she has gotten her paying position. It was a joy to see her. She was wearing a smart uniform and open-toed shoes, and her hair was in an elaborate frizz around her face. We are still cleaning up the mess from the bomb, and Langby was out with Allen getting wood to board up the choir, so I let the girl chatter at me while I swept. The dust made her sneeze, but at least this time I knew what she was doing.

She told me her name is Enola and that she's working for the WVS, running one of the mobile canteens that are sent to the fires. She came, of all things, to thank me for the job. She said that after she told the WVS that there was no proper shelter with a canteen for St. Paul's, they gave her a run in the City. "So I'll just pop in when I'm close and let you know how I'm making out, won't I just?"

She and her brother Tom are still sleeping in the tubes. I asked her if that was safe and she said probably not, but at least down there you couldn't hear the one that got you and that was a blessing.

October 18—I am so tired I can hardly write this. Nine incendiaries tonight and a land mine that looked as though it was going to catch on the dome till the wind drifted its parachute away from the church. I put out two of the incendiaries. I have done that at least twenty times since I got here and helped with dozens of others, and still it is not enough. One incendiary, one moment of not watching Langby, could undo it all.

I know that is partly why I feel so tired. I wear myself out every night trying to do my job and watch Langby, making sure none of the incendiaries falls without my seeing it. Then I go back to the crypt and wear myself out trying to retrieve something, anything, about spies, fires, St. Paul's in the fall of 1940, anything. It haunts me that I am not doing enough, but I do not know what else to do. Without the retrieval, I am as helpless as these poor people here, with no idea what will happen tomorrow.

If I have to, I will go on doing this till I am called home. He cannot

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burn down St. Paul's so long as I am here to put out the incendiaries. "I have my duty," Langby said in the crypt.

And I have mine.

October 21—It's been nearly two weeks since the blast and I just now realized we haven't seen the cat since. He wasn't in the mess in the crypt. Even after Langby and I were sure there was no one in there, we sifted through the stuff twice more. He could have been in the choir, though.

Old Bence-Jones says not to worry. "He's all right," he said. "The jerries could bomb London right down to the ground and the cats would waltz out to greet them. You know why? They don't love anybody. That's what gets half of us killed. Old lady out in Stepney got killed the other night trying to save her cat. Bloody cat was in the Anderson."

"Then where is he?"

"Someplace safe, you can bet on that. If he's not around St. Paul's, it means we're for it. That old saw about the rats deserting a sinking ship, that's a mistake, that is. It's cats, not rats."

October 25—Langby's tourist showed up again. He cannot still be looking for the Windmill Theatre. He had a newspaper under his arm again today, and he asked for Langby, but Langby was across town with Allen, trying to get the asbestos firemen's coats. I saw the name of the paper. It was *The Worker*. A Nazi newspaper?

November 2—I've been up on the roofs for a week straight, helping some incompetent workmen patch the hole the bomb made. They're doing a terrible job. There's still a great gap on one side a man could fall into, but they insist it'll be all right because, after all, you wouldn't fall clear through but only as far as the ceiling, and "the fall can't kill you." They don't seem to understand it's a perfect hiding place for an incendiary.

And that is all Langby needs. He does not even have to set a fire to destroy St. Paul's. All he needs to do is let one burn uncaught until it is too late.

I could not get anywhere with the workmen. I went down into the church to complain to Matthews, and saw Langby and his tourist behind a pillar, close to one of the windows. Langby was holding a newspaper and talking to the man. When I came down from the library an hour later, they were still there. So is the gap. Matthews says we'll put planks across it and hope for the best.

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November 5—I have given up trying to retrieve. I am so far behind on my sleep I can't even retrieve information on a newspaper whose name I already know. Double watches the permanent thing now. Our chars have abandoned us altogether (like the cat), so the crypt is quiet, but I cannot sleep.

If I do manage to doze off, I dream. Yesterday I dreamed Kivrin was on the roofs, dressed like a saint. "What was the secret of your practicum?" I said. "What were you supposed to find out?"

She wiped her nose with a handkerchief and said, "Two things. One, that silence and humility are the sacred burdens of the historian. Two," she stopped and sneezed into the handkerchief. "Don't sleep in the tubes."

My only hope is to get hold of an artificial and induce a trance. That's a problem. I'm positive it's too early for chemical endorphins and probably hallucinogens. Alcohol is definitely available, but I need something more concentrated than ale, the only alcohol I know by name. I do not dare ask the watch. Langby is suspicious enough of me already. It's back to the *OED*, to look up a word I don't know.

November 11—The cat's back. Langby was out with Allen again, still trying for the asbestos coats, so I thought it was safe to leave St. Paul's. I went to the grocer's for supplies and hopefully, an artificial. It was late, and the sirens sounded before I had even gotten to Cheapside, but the raids do not usually start until after dark. It took awhile to get all the groceries and to get up my courage to ask whether he had any alcohol—he told me to go to a pub—and when I came out of the shop, it was as if I had pitched suddenly into a hole.

I had no idea where St. Paul's lay, or the street, or the shop I had just come from. I stood on what was no longer the sidewalk, clutching my brown-paper parcel of kippers and bread with a hand I could not have seen if I held it up before my face. I reached up to wrap my muffler closer about my neck and prayed for my eyes to adjust, but there was no reduced light to adjust to. I would have been glad of the moon, for all St. Paul's watch curses it and calls it a fifth columnist. Or a bus, with its shuttered headlights giving just enough light to orient myself by. Or a searchlight. Or the kickback flare of an ack-ack gun. Anything.

Just then I did see a bus, two narrow yellow slits a long way off. I started toward it and nearly pitched off the curb. Which meant the bus was sideways in the street, which meant it was not a bus. A cat meowed, quite near, and rubbed against my leg. I looked down into

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the yellow lights I had thought belonged to the bus. His eyes were picking up light from somewhere, though I would have sworn there was not a light for miles, and reflecting it flatly up at me.

"A warden'll get you for those lights, old tom," I said, and then as a plane droned overhead, "Or a jerry."

The world exploded suddenly into light, the searchlights and a glow along the Thames seeming to happen almost simultaneously, lighting my way home.

"Come to fetch me, did you, old tom?" I said gaily. "Where've you been? Knew we were out of kippers, didn't you? I call that loyalty." I talked to him all the way home and gave him half a tin of the kippers for saving my life. Bence-Jones said he smelled the milk at the grocer's.

November 13—I dreamed I was lost in the blackout. I could not see my hands in front of my face, and Dunworthy came and shone a pocket torch at me, but I could only see where I had come from and not where I was going.

"What good is that to them?" I said. "They need a light to show them where they're going."

"Even the light from the Thames? Even the light from the fires and the ack-ack guns?" Dunworthy said.

"Yes. Anything is better than this awful darkness." So he came closer to give me the pocket torch. It was not a pocket torch, after all, but Christ's lantern from the Hunt picture in the south nave. I shone it on the curb before me so I could find my way home, but it shone instead on the firewatch stone and I hastily put the light out.

November 20—I tried to talk to Langby today. "I've seen you talking to the old gentleman," I said. It sounded like an accusation. I meant it to. I wanted him to think it was and stop whatever he was planning.

"Reading," he said. "Not talking." He was putting things in order in the choir, piling up sandbags.

"I've seen you reading then," I said belligerently, and he dropped a sandbag and straightened.

"What of it?" he said. "It's a free country. I can read to an old man if I want, same as you can talk to that little WVS tart."

"What do you read?" I said.

"Whatever he wants. He's an old man. He used to come home from his job, have a bit of brandy and listen to his wife read the papers

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to him. She got killed in one of the raids. Now I read to him. I don't see what business it is of yours."

It sounded true. It didn't have the careful casualness of a lie, and I almost believed him, except that I had heard the tone of truth from him before. In the crypt. After the bomb.

"I thought he was a tourist looking for the Windmill," I said.

He looked blank only a second, and then he said, "Oh, yes, that. He came in with the paper and asked me to tell him where it was. I looked it up to find the address. Clever, that. I didn't guess he couldn't read it for himself." But it was enough. I knew that he was lying.

He heaved a sandbag almost at my feet. "Of course you wouldn't understand a thing like that, would you? A simple act of human kindness?"

"No," I said coldly. "I wouldn't."

None of this proves anything. He gave away nothing, except perhaps the name of an artificial, and I can hardly go to Dean Matthews and accuse Langby of reading aloud.

I waited till he had finished in the choir and gone down to the crypt. Then I lugged one of the sandbags up to the roof and over to the chasm. The planking has held so far, but everyone walks gingerly around it, as if it were a grave. I cut the sandbag open and spilled the loose sand into the bottom. If it has occurred to Langby that this is the perfect spot for an incendiary, perhaps the sand will smother it.

November 21—I gave Enola some of "uncle's" money today and asked her to get me the brandy. She was more reluctant than I thought she'd be so there must be societal complications I am not aware of, but she agreed.

I don't know what she came for. She started to tell me about her brother and some prank he'd pulled in the tubes that got him in trouble with the guard, but after I asked her about the brandy, she left without finishing the story.

November 25—Enola came today, but without bringing the brandy. She is going to Bath for the holidays to see her aunt. At least she will be away from the raids for awhile. I will not have to worry about her. She finished the story of her brother and told me she hopes to persuade this aunt to take Tom for the duration of the Blitz but is not at all sure the aunt will be willing.

Young Tom is apparently not so much an engaging scapegrace as

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a near-criminal. He has been caught twice picking pockets in the Bank tube shelter, and they have had to go back to Marble Arch. I comforted her as best I could, told her all boys were bad at one time or another. What I really wanted to say was that she needn't worry at all, that young Tom strikes me as a true survivor type, like my own tom, like Langby, totally unconcerned with anybody but himself, well-equipped to survive the Blitz and rise to prominence in the future.

Then I asked her whether she had gotten the brandy.

She looked down at her open-toed shoes and muttered unhappily, "I thought you'd forgotten all about that."

I made up some story about the watch taking turns buying a bottle, and she seemed less unhappy, but I am not convinced she will not use this trip to Bath as an excuse to do nothing. I will have to leave St. Paul's and buy it myself, and I don't dare leave Langby alone in the church. I made her promise to bring the brandy today before she leaves. But she is still not back, and the sirens have already gone.

November 26—No Enola, and she said their train left at noon. I suppose I should be grateful that at least she is safely out of London. Maybe in Bath she will be able to get over her cold.

Tonight one of the ARP girls breezed in to borrow half our cots and tell us about a mess over in the East End where a surface shelter was hit. Four dead, twelve wounded. "At least it wasn't one of the tube shelters!" she said. "Then you'd see a real mess, wouldn't you?"

November 30—I dreamed I took the cat to St. John's Wood.

"Is this a rescue mission?" Dunworthy said.

"No, sir," I said proudly. "I know what I was supposed to find in my practicum. The perfect survivor. Tough and resourceful and selfish. This is the only one I could find. I had to kill Langby, you know, to keep him from burning down St. Paul's. Enola's brother has gone to Bath, and the others will never make it. Enola wears open-toed shoes in the winter and sleeps in the tubes and puts her hair up on metal pins so it will curl. She cannot possibly survive the Blitz."

Dunworthy said, "Perhaps you should have rescued her instead. What did you say her name was?"

"Kivrin," I said, and woke up cold and shivering.

December 5—I dreamed Langby had the pinpoint bomb. He carried it under his arm like a brown-paper parcel, coming out of St.

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Paul's Station and up Ludgate Hill to the west doors.

"This is not fair," I said, barring his way with my arm. "There is no fire watch on duty."

He clutched the bomb to his chest like a pillow. "That is your fault," he said, and before I could get to my stirrup pump and bucket, he tossed it in the door.

The pinpoint was not even invented until the end of the twentieth century, and it was another ten years before the dispossessed Communists got hold of it and turned it into something that could be carried under your arm. A parcel that could blow a quarter-mile of the City into oblivion. Thank God that is one dream that cannot come true.

It was a sunlit morning in the dream, and this morning when I came off watch the sun was shining for the first time in weeks. I went down to the crypt and then came up again, making the rounds of the roofs twice more, then the steps and the grounds and all the treacherous alleyways between where an incendiary could be missed. I felt better after that, but when I got to sleep I dreamed again, this time of fire and Langby watching it, smiling.

December 15—I found the cat this morning. Heavy raids last night, but most of them over towards Canning Town and nothing on the roofs to speak of. Nevertheless the cat was quite dead. I found him lying on the steps this morning when I made my own, private rounds. Concussion. There was not a mark on him anywhere except the white blackout patch on his throat, but when I picked him up, he was all jelly under the skin.

I could not think what to do with him. I thought for one mad moment of asking Matthews if I could bury him in the crypt. Honorable death in war or something. Trafalgar, Waterloo, London, died in battle. I ended by wrapping him in my muffler and taking him down Ludgate Hill to a building that had been bombed out and burying him in the rubble. It will do no good. The rubble will be no protection from dogs or rats, and I shall never get another muffler. I have gone through nearly all of uncle's money.

I should not be sitting here. I haven't checked the alleyways or the rest of the steps, and there might be a dud or a delayed incendiary or something that I missed.

When I came here, I thought of myself as the noble rescuer, the savior of the past. I am not doing very well at the job. At least Enola is out of it. I wish there were some way I could send St. Paul's to Bath for safekeeping. There were hardly any raids last night. Bence-

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Jones said cats can survive anything. What if he was coming to get me, to show me the way home? All the bombs were over Canning Town.

December 16—Enola has been back a week. Seeing her, standing on the west steps where I found the cat, sleeping in Marble Arch and not safe at all, was more than I could absorb. "I thought you were in Bath," I said stupidly.

"My aunt said she'd take Tom but not me as well. She's got a houseful of evacuation children, and what a noisy lot. Where is your muffler?" she said. "It's dreadful cold up here on the hill."

"I . . ." I said, unable to answer, "I lost it."

"You'll never get another one," she said. "They're going to start rationing clothes. And wool, too. You'll never get another one like that."

"I know," I said, blinking at her.

"Good things just thrown away," she said. "It's absolutely criminal, that's what it is."

I don't think I said anything to that, just turned and walked away with my head down, looking for bombs and dead animals.

December 20—Langby isn't a Nazi. He's a Communist. I can hardly write this. A Communist.

One of the chars found *The Worker* wedged behind a pillar and brought it down to the crypt as we were coming off the first watch.

"Bloody Communists," Bence-Jones said. "Helping Hitler, they are. Talking against the king, stirring up trouble in the shelters. Traitors, that's what they are."

"They love England same as you," the char said.

"They don't love nobody but themselves, bloody selfish lot. I wouldn't be surprised to hear they were ringing Hitler up on the telephone," Bence-Jones said. "' 'Ello, Adolf, here's where to drop the bombs.' "

The kettle on the gas ring whistled. The char stood up and poured the hot water into a chipped tea pot, then sat back down. "Just because they speak their minds don't mean they'd burn down old St. Paul's, does it now?"

"Of course not," Langby said, coming down the stairs. He sat down and pulled off his boots, stretching his feet in their wool socks. "Who wouldn't burn down St. Paul's?"

"The Communists," Bence-Jones said, looking straight at him, and I wondered if he suspected Langby, too.

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Langby never batted an eye. "I wouldn't worry about them if I were you," he said. "It's the jerries that are doing their bloody best to burn her down tonight. Six incendiaries so far, and one almost went into that great hole over the choir." He held out his cup to the char, and she poured him a cup of tea.

I wanted to kill him, smashing him to dust and rubble on the floor of the crypt while Bence-Jones and the char looked on in helpless surprise, shouting warnings to them and the rest of the watch. "Do you know what the Communists did?" I wanted to shout. "Do you? We have to stop him." I even stood up and started toward him as he sat with his feet stretched out before him and his asbestos coat still over his shoulders.

And then the thought of the Gallery drenched in gold, the Communist coming out of the tube station with the package so casually under his arm, made me sick with the same staggering vertigo of guilt and helplessness, and I sat back down on the edge of my cot and tried to think what to do.

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They do not realize the danger. Even Bence-Jones, for all his talk of traitors, thinks they are capable only of talking against the king. They do not know, cannot know, what the Communists will become. Stalin is an ally. Communists mean Russia. They have never heard of Karinsky or the New Russia or any of the things that will make "Communist" into a synonym for "monster." They will never know it. By the time the Communists become what they became, there will be no fire watch. Only I know what it means to hear the name "Communist" uttered here, so carelessly, in St. Paul's.

A Communist. I should have known. I should have known.

December 22—Double watches again. I have not had any sleep, and I am getting very unsteady on my feet. I nearly pitched into the chasm this morning, only saved myself by dropping to my knees. My endorphin levels are fluctuating wildly, and I know I must get some sleep soon or I will become one of Langby's walking dead; but I am afraid to leave him alone on the roofs, alone in the church with his Communist party leader, alone anywhere. I have taken to watching him when he sleeps.

If I could just get hold of an artificial, I think I could induce a trance, in spite of my poor condition. But I cannot even go out to a pub. Langby is on the roofs constantly, waiting for his chance. When Enola comes again, I must convince her to get the brandy for me. There are only a few days left.

December 28—Enola came this morning while I was on the west porch, picking up the Christmas tree. It has been knocked over three nights running by concussion. I righted the tree and was bending down to pick up the scattered tinsel when Enola appeared suddenly out of the fog like some cheerful saint. She stooped quickly and kissed me on the cheek. Then she straightened up, her nose red from her perennial cold, and handed me a box wrapped in colored paper.

"Merry Christmas," she said. "Go on then, open it. It's a gift."

My reflexes are almost totally gone. I knew the box was far too shallow for a bottle of brandy. Nevertheless, I believed she had remembered, had brought me my salvation. "You darling," I said, and tore it open.

It was a muffler. Gray wool. I stared at it for fully half a minute without realizing what it was. "Where's the brandy?" I said.

She looked shocked. Her nose got redder and her eyes started to blur. "You need this more. You haven't any clothing coupons and you have to be outside all the time. It's been so dreadful cold."

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"I *needed* the brandy," I said angrily.

"I was only trying to be kind," she started, and I cut her off.

"Kind?" I said. "I asked you for brandy. I don't recall ever saying I needed a muffler." I shoved it back at her and began untangling a string of colored lights that had shattered when the tree fell.

She got that same holy martyr look Kivrin is so wonderful at. "I worry about you all the time up here," she said in a rush. "They're *trying* for St. Paul's, you know. And it's so close to the river. I didn't think you should be drinking. I . . . it's a crime when they're trying so hard to kill us all that you won't take care of yourself. It's like you're in it with them. I worry someday I'll come up to St. Paul's and you won't be here."

"Well, and what exactly am I supposed to do with a muffler? Hold it over my head when they drop the bombs?"

She turned and ran, disappearing into the gray fog before she had gone down two steps. I started after her, still holding the string of broken lights, tripped over it, and fell almost all the way to the bottom of the steps.

Langby picked me up. "You're off watches," he said grimly.

"You can't do that," I said.

"Oh, yes, I can. I don't want any walking dead on the roofs with me."

I let him lead me down here to the crypt, make me a cup of tea, put me to bed, all very solicitous. No indication that this is what he has been waiting for. I will lie here till the sirens go. Once I am on the roofs he will not be able to send me back without seeming suspicious. Do you know what he said before he left, asbestos coat and rubber boots, the dedicated fire watcher? "I want you to get some sleep." As if I could sleep with Langby on the roofs. I would be burned alive.

December 30—The sirens woke me, and old Bence-Jones said, "That should have done you some good. You've slept the clock round."

"What day is it?" I said, going for my boots.

"The twenty-ninth," he said, and as I dived for the door, "No need to hurry. They're late tonight. Maybe they won't come at all. That'd be a blessing, that would. The tide's out."

I stopped by the door to the stairs, holding onto the cool stone. "Is St. Paul's all right?"

"She's still standing," he said. "Have a bad dream?"

"Yes," I said, remembering the bad dreams of all the past

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weeks—the dead cat in my arms in St. John's Wood, Langby with his parcel and his *Worker* under his arm, the fire-watch stone garishly lit by Christ's lantern. Then I remembered I had not dreamed at all. I had slept the kind of sleep I had prayed for, the kind of sleep that would help me remember.

Then I remembered. Not St. Paul's, burned to the ground by the Communists. A headline from the dailies. "Marble Arch hit. Eighteen killed by blast." The date was not clear except for the year. 1940. There were exactly two more days left in 1940. I grabbed my coat and muffler and ran up the stairs and across the marble floor.

"Where the hell do you think you're going?" Langby shouted to me. I couldn't see him.

"I have to save Enola," I said, and my voice echoed in the dark sanctuary. "They're going to bomb Marble Arch."

"You can't leave now," he shouted after me, standing where the firewatch stone would be. "The tide's out. You dirty . . ."

I didn't hear the rest of it. I had already flung myself down the steps and into a taxi. It took almost all the money I had, the money I had so carefully hoarded for the trip back to St. John's Wood. Shelling started while we were still in Oxford Street, and the driver refused to go any farther. He let me out into pitch blackness, and I saw I would never make it in time.

Blast. Enola crumpled on the stairway down to the tube, her open-toed shoes still on her feet, not a mark on her. And when I try to lift her, jelly under the skin. I would have to wrap her in the muffler she gave me, because I was too late. I had gone back a hundred years to be too late to save her.

I ran the last blocks, guided by the gun emplacement that had to be in Hyde Park, and skidded down the steps into Marble Arch. The woman in the ticket booth took my last shilling for a ticket to St. Paul's Station. I stuck it in my pocket and raced toward the stairs.

"No running," she said placidly. "To your left, please." The door to the right was blocked off by wooden barricades, the metal gates beyond pulled to and chained. The board with names on it for the stations was X-ed with tape, and a new sign that read, "All trains," was nailed to the barricade, pointing left.

Enola was not on the stopped escalators or sitting against the wall in the hallway. I came to the first stairway and could not get through. A family had set out, just where I wanted to step, a communal tea of bread and butter, a little pot of jam sealed with waxed paper, and a kettle on a ring like the one Langby and I had rescued out of the rubble, all of it spread on a cloth embroidered at the corners with

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flowers. I stood staring down at the layered tea, spread like a waterfall down the steps.

"I . . . Marble Arch . . ." I said. Another twenty killed by flying tiles. "You shouldn't be here."

"We've as much right as anyone," the man said belligerently, "and who are you to tell us to move on?"

A woman lifting saucers out of a cardboard box looked up at me, frightened. The kettle began to whistle.

"It's you that should move on," the man said. "Go on then." He stood off to one side so I could pass. I edged past the embroidered cloth apologetically.

"I'm sorry," I said. "I'm looking for someone. On the platform."

"You'll never find her in there, mate," the man said, thumbing in that direction. I hurried past him, nearly stepping on the teacloth, and rounded the corner into hell.

It was not hell. Shopgirls folded coats and leaned back against them, cheerful or sullen or disagreeable, but certainly not damned. Two boys scuffled for a shilling and lost it on the tracks. They bent over the edge, debating whether to go after it, and the station guard yelled to them to back away. A train rumbled through, full of people. A mosquito landed on the guard's hand and he reached out to slap it and missed. The boys laughed. And behind and before them, stretching in all directions down the deadly tile curves of the tunnel like casualties, backed into the entrance-ways and onto the stairs, were people. Hundreds and hundreds of people.

I stumbled back into the hall, knocking over a teacup. It spilled like a flood across the cloth.

"I told you, mate," the man said cheerfully. "It's Hell in there, ain't it? And worse below."

"Hell," I said. "Yes." I would never find her. I would never save her. I looked at the woman mopping up the tea, and it came to me that I could not save her either. Enola or the cat or any of them, lost here in the endless stairways and cul-de-sacs of time. They were already dead a hundred years, past saving. The past is beyond saving. Surely that was the lesson the history department sent me all this way to learn. Well, fine, I've learned it. Can I go home now?

Of course not, dear boy. You have foolishly spent all your money on taxicabs and brandy, and tonight is the night the Germans burn the City. (Now it is too late, I remember it all. Twenty-eight incendiaries on the roofs.) Langby must have his chance, and you must learn the hardest lesson of all and the one you should have known from the beginning. You cannot save St. Paul's.

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I went back out onto the platform and stood behind the yellow line until a train pulled up. I took my ticket out and held it in my hand all the way to St. Paul's Station. When I got there, smoke billowed toward me like an easy spray of water. I could not see St. Paul's.

"The tide's out," a woman said in a voice devoid of hope, and I went down in a snake pit of limp cloth hoses. My hands came up covered with rank-smelling mud, and I understood finally (and too late) the significance of the tide. There was no water to fight the fires.

A policeman barred my way and I stood helplessly before him with no idea what to say. "No civilians allowed up there," he said. "St. Paul's is for it." The smoke billowed like a thundercloud, alive with sparks, and the dome rose golden above it.

"I'm fire watch," I said, and his arm fell away, and then I was on the roofs.

My endorphin levels must have been going up and down like an air raid siren. I do not have any short-term from then on, just moments that do not fit together: the people in the church when we brought Langby down, huddled in a corner playing cards, the whirlwind of burning scraps of wood in the dome, the ambulance driver who wore open-toed shoes like Enola and smeared salve on my burned hands. And in the center, the one clear moment when I went after Langby on a rope and saved his life.

I stood by the dome, blinking against the smoke. The City was on fire and it seemed as if St. Paul's would ignite from the heat, would crumble from the noise alone. Bence-Jones was by the northwest tower, hitting at an incendiary with a spade. Langby was too close to the patched place where the bomb had gone through, looking toward me. An incendiary clattered behind him. I turned to grab a shovel, and when I turned back, he was gone.

"Langby!" I shouted, and could not hear my own voice. He had fallen into the chasm and nobody saw him or the incendiary. Except me. I do not remember how I got across the roof. I think I called for a rope. I got a rope. I tied it around my waist, gave the ends of it into the hands of the fire watch, and went over the side. The fires lit the walls of the hole almost all the way to the bottom. Below me I could see a pile of whitish rubble. He's under there, I thought, and jumped free of the wall. The space was so narrow there was nowhere to throw the rubble. I was afraid I would inadvertently stone him, and I tried to toss the pieces of planking and plaster over my shoulder, but there was barely room to turn. For one awful moment I

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thought he might not be there at all, that the pieces of splintered wood would brush away to reveal empty pavement, as they had in the crypt.

I was numbed by the indignity of crawling over him. If he was dead I did not think I could bear the shame of stepping on his helpless body. Then his hand came up like a ghost's and grabbed my ankle, and within seconds I had whirled and had his head free.

He was the ghastly white that no longer frightens me. "I put the bomb out," he said. I stared at him, so overwhelmed with relief I could not speak. For one hysterical moment I thought I would even laugh, I was so glad to see him. I finally realized what it was I was supposed to say.

"Are you all right?" I said.

"Yes," he said, and tried to raise himself on one elbow. "So much the worse for you."

He could not get up. He grunted with pain when he tried to shift his weight to his right side and lay back, the uneven rubble crunching sickeningly under him. I tried to lift him gently so I could see where he was hurt. He must have fallen on something.

"It's no use," he said, breathing hard. "I put it out."

I spared him a startled glance, afraid that he was delirious, and went back to rolling him onto his side.

"I know you were counting on this one," he went on, not resisting me at all. "It was bound to happen sooner or later with all these roofs. Only I went after it. What'll you tell your friends?"

His asbestos coat was torn down the back in a long gash. Under it his back was charred and smoking. He had fallen on the incendiary. "Oh, my God," I said, trying frantically to see how badly he was burned without touching him. I had no way of knowing how deep the burns went, but they seemed to extend only in the narrow space where the coat had torn. I tried to pull the bomb out from under him, but the casing was as hot as a stove. It was not melting, though. My sand and Langby's body had smothered it. I had no idea if it would start up again when it was exposed to the air. I looked around, a little wildly, for the bucket and stirrup pump Langby must have dropped when he fell.

"Looking for a weapon?" Langby said, so clearly it was hard to believe he was hurt at all. "Why not just leave me here? A bit of overexposure and I'd be done for by morning. Or would you rather do your dirty work in private?"

I stood up and yelled to the men on the roof above us. One of them shone a pocket torch down at us, but its light didn't reach.

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"Is he dead?" somebody shouted down to me.

"Send for an ambulance," I said. "He's been burned."

I helped Langby up, trying to support his back without touching the burn. He staggered a little and then leaned against the wall, watching me as I tried to bury the incendiary, using a piece of the planking as a scoop. The rope came down and I tied Langby to it. He had not spoken since I helped him up. He let me tie the rope around his waist, still looking steadily at me. "I should have let you smother in the crypt," he said.

He stood leaning easily, almost relaxed against the wood supports, his hands holding him up. I put his hands on the slack rope and wrapped it once around them for the grip I knew he didn't have. "I've been onto you since that day in the Gallery. I knew you weren't afraid of heights. You came down here without any fear of heights when you thought I'd ruined your precious plans. What was it? An attack of conscience? Kneeling there like a baby, whining, 'What have we done? What have we done?' You made me sick. But you know what gave you away first? The cat. Everybody knows cats hate water. Everybody but a dirty Nazi spy."

There was a tug on the rope. "Come ahead," I said, and the rope tautened.

"That WVS tart? Was she a spy, too? Supposed to meet you in Marble Arch? Telling me it was going to be bombed. You're a rotten spy, Bartholomew. Your friends already blew it up in September. It's open again."

The rope jerked suddenly and began to lift Langby. He twisted his hands to get a better grip. His right shoulder scraped the wall. I put up my hands and pushed him gently so that his left side was to the wall. "You're making a big mistake, you know," he said. "You should have killed me. I'll tell."

I stood in the darkness, waiting for the rope. Langby was unconscious when he reached the roof. I walked past the fire watch to the dome and down to the crypt.

This morning the letter from my uncle came and with it a ten-pound note.

December 31—Two of Dunworthy's flunkies met me in St. John's Wood to tell me I was late for my exams. I did not even protest. I shuffled obediently after them without even considering how unfair it was to give an exam to one of the walking dead. I had not slept in—how long? Since yesterday when I went to find Enola. I had not slept in a hundred years.

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Dunworthy was at his desk, blinking at me. One of the flunkies handed me a test paper and the other one called time. I turned the paper over and left an oily smudge from the ointment on my burns. I stared uncomprehendingly at them. I had grabbed at the incendiary when I turned Langby over, but these burns were on the backs of my hands. The answer came to me suddenly in Langby's unyielding voice. "They're rope burns, you fool. Don't they teach you Nazi spies the proper way to come up a rope?"

I looked down at the test. It read, "Number of incendiaries that fell on St. Paul's. Number of land mines. Number of high explosive bombs. Method most commonly used for extinguishing incendiaries. Land mines. High explosive bombs. Number of volunteers on first watch. Second watch. Casualties. Fatalities." The questions made no sense. There was only a short space, long enough for the writing of a number, after any of the questions. Method most commonly used for extinguishing incendiaries. How would I ever fit what I knew into that narrow space? Where were the questions about Enola and Langby and the cat?

I went up to Dunworthy's desk. "St. Paul's almost burned down last night," I said. "What kind of questions are these?"

"You should be answering questions, Mr. Bartholomew, not asking them."

"There aren't any questions about the people," I said. The outer casing of my anger began to melt.

"Of course there are," Dunworthy said, flipping to the second page of the test. "Number of casualties, 1940. Blast, shrapnel, other."

"Other?" I said. At any moment the roof would collapse on me in a shower of plaster dust and fury. "Other? Langby put out a fire with his own body. Enola has a cold that keeps getting worse. The cat . . ." I snatched the paper back from him and scrawled "one cat" in the narrow space next to "blast." "Don't you care about them at all?"

"They're important from a statistical point of view," he said, "but as individuals, they are hardly relevant to the course of history."

My reflexes were shot. It was amazing to me that Dunworthy's were almost as slow. I grazed the side of his jaw and knocked his glasses off. "Of course they're relevant!" I shouted. "They *are* the history, not all these bloody numbers!"

The reflexes of the flunkies were very fast. They did not let me start another swing at him before they had me by both arms and were hauling me out of the room.

"They're back there in the past with nobody to save them. They

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can't see their hands in front of their faces and there are bombs falling down on them and you tell me they aren't important? You call that being an historian?"

The flunkies dragged me out the door and down the hall. "Langby saved St. Paul's. How much more important can a person get? You're no historian! You're nothing but a . . ." I wanted to call him a terrible name, but the only curses I could summon up were Langby's. "You're nothing but a dirty Nazi spy!" I bellowed. "You're nothing but a lazy bourgeois tart!"

They dumped me on my hands and knees outside the door and slammed it in my face. "I wouldn't be an historian if you paid me!" I shouted, and went to see the firewatch stone.

December 31—I am having to write this in bits and pieces. My hands are in pretty bad shape, and Dunworthy's boys didn't help matters much. Kivrin comes in periodically, wearing her St. Joan look, and smears so much salve on my hands that I can't hold a pencil.

St. Paul's Station is not there, of course, so I got out at Holborn and walked, thinking about my last meeting with Dean Matthews on the morning after the burning of the City. This morning.

"I understand you saved Langby's life," he said. "I also understand that between you, you saved St. Paul's last night."

I showed him the letter from my uncle and he stared at it as if he could not think what it was. "Nothing stays saved forever," he said, and for a terrible moment I thought he was going to tell me Langby had died. "We shall have to keep on saving St. Paul's until Hitler decides to bomb the countryside."

The raids on London are almost over, I wanted to tell him. He'll start bombing the countryside in a matter of weeks. Canterbury, Bath, aiming always at the cathedrals. You and St. Paul's will both outlast the war and live to dedicate the firewatch stone.

"I am hopeful, though," he said. "I think the worst is over."

"Yes, sir." I thought of the stone, its letters still readable after all this time. No, sir, the worst is not over.

I managed to keep my bearings almost to the top of Ludgate Hill. Then I lost my way completely, wandering about like a man in a graveyard. I had not remembered that the rubble looked so much like the white plaster dust Langby had tried to dig me out of. I could not find the stone anywhere. In the end I nearly fell over it, jumping back as if I had stepped on a grave.

It is all that's left. Hiroshima is supposed to have had a handful

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of untouched trees at ground zero, Denver the capitol steps. Neither of them says, "Remember the men and women of St. Paul's Watch who by the grace of God saved this cathedral." The grace of God.

Part of the stone is sheared off. Historians argue there was another line that said, "for all time", but I do not believe that, not if Dean Matthews had anything to do with it. And none of the watch it was dedicated to would have believed it for a minute. We saved St. Paul's every time we put out an incendiary, and only until the next one fell. Keeping watch on the danger spots, putting out the little fires with sand and stirrup pumps, the big ones with our bodies, in order to keep the whole vast complex structure from burning down. Which sounds to me like a course description for History Practicum 401. What a fine time to discover what historians are for when I have tossed my chance for being one out the windows as easily as they tossed the pinpoint bomb in! No, sir, the worst is not over.

There are flash burns on the stone, where legend says the Dean of St. Paul's was kneeling when the bomb went off. Totally apocryphal, of course, since the front door is hardly an appropriate place for prayers. It is more likely the shadow of a tourist who wandered in to ask the whereabouts of the Windmill Theatre, or the imprint of a girl bringing a volunteer his muffler. Or a cat.

Nothing is saved forever, Dean Matthews; and I knew that when I walked in the west doors that first day, blinking into the gloom, but it is pretty bad nevertheless. Standing here knee-deep in rubble out of which I will not be able to dig any folding chairs or friends, knowing that Langby died thinking I was a Nazi spy, knowing that Enola came one day and I wasn't there. It's pretty bad.

But it is not as bad as it could be. They are both dead, and Dean Matthews too; but they died without knowing what I knew all along, what sent me to my knees in the Whispering Gallery, sick with grief and guilt: that in the end none of us saved St. Paul's. And Langby cannot turn to me, stunned and sick at heart, and say, "Who did this? Your friends the Nazis?" And I would have to say, "No. The Communists." That would be the worst.

I have come back to the room and let Kivrin smear more salve on my hands. She wants me to get some sleep. I know I should pack and get gone. It will be humiliating to have them come and throw me out, but I do not have the strength to fight her. She looks so much like Enola.

January 1—I have apparently slept not only through the night, but through the morning mail drop as well. When I woke up just

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now, I found Kivrin sitting on the end of the bed holding an envelope. "Your grades came," she said.

I put my arm over my eyes. "They can be marvelously efficient when they want to, can't they?"

"Yes," Kivrin said.

"Well, let's see it," I said, sitting up. "How long do I have before they come and throw me out?"

She handed the flimsy computer envelope to me. I tore it along the perforation. "Wait," she said. "Before you open it, I want to say something." She put her hand gently on my burns. "You're wrong about the history department. They're very good."

It was not exactly what I expected her to say. "Good is not the word I'd use to describe Dunworthy," I said and yanked the inside slip free.

Kivrin's look did not change, not even when I sat there with the printout on my knees where she could surely see it.

"Well," I said.

The slip was hand-signed by the esteemed Dunworthy. I have taken a first. With honors.

January 2—Two things came in the mail today. One was Kivrin's assignment. The history department thinks of everything—even to keeping her here long enough to nursemaid me, even to coming up with a prefabricated trial by fire to send their history majors through.

I think I wanted to believe that was what they had done, Enola and Langby only hired actors, the cat a clever android with its clockwork innards taken out for the final effect, not so much because I wanted to believe Dunworthy was not good at all, but because then I would not have this nagging pain at not knowing what had happened to them.

"You said your practicum was England in 1300?" I said, watching her as suspiciously as I had watched Langby.

"1349," she said, and her face went slack with memory. "The plague year."

"My God," I said. "How could they do that? The plague's a ten."

"I have a natural immunity," she said, and looked at her hands.

Because I could not think of anything to say, I opened the other piece of mail. It was a report on Enola. Computer-printed, facts and dates and statistics, all the numbers the history department so dearly loves, but it told me what I thought I would have to go without knowing: that she had gotten over her cold and survived the Blitz.

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Young Tom had been killed in the Baedaker raids on Bath, but Enola had lived until 2006, the year before they blew up St. Paul's.

I don't know whether I believe the report or not, but it does not matter. It is, like Langby's reading aloud to the old man, a simple act of human kindness. They think of everything.

Not quite. They did not tell me what happened to Langby. But I find as I write this that I already know: I saved his life. It does not seem to matter that he might have died in hospital next day; and I find, in spite of all the hard lessons the history department has tried to teach me, I do not quite believe this one: that nothing is saved forever. It seems to me that perhaps Langby is.

January 3—I went to see Dunworthy today. I don't know what I intended to say—some pompous drivel about my willingness to serve in the firewatch of history, standing guard against the falling incendiaries of the human heart, silent and saintly.

But he blinked at me nearsightedly across his desk, and it seemed to me that he was blinking at that last bright image of St. Paul's in sunlight before it was gone forever and that he knew better than anyone that the past cannot be saved, and I said instead, "I'm sorry that I broke your glasses, sir."

"How did you like St. Paul's?" he said, and like my first meeting with Enola, I felt I must be somehow reading the signals all wrong, that he was not feeling loss, but something quite different.

"I loved it, sir," I said.

"Yes," he said. "So do I."

Dean Matthews is wrong. I have fought with memory my whole practicum only to find that it is not the enemy at all, and being an historian is not some saintly burden after all. Because Dunworthy is not blinking against the fatal sunlight of the last morning, but into the gloom of that first afternoon, looking in the great west doors of St. Paul's at what is, like Langby, like all of it, every moment, in us, saved forever.

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LETTERS

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Even though your story is in competition with the 200-odd stories that showed up the week yours did, your chances are really not bad. Many of the stories we get—alas!—are Simply Awful, so much so that yours—if at all competently written—will stand out from the pack

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like—well, like an iceberg in a sea of slush, to use a possibly over-obvious turn of phrase. And even if you're convinced that your story isn't very good, we'd still rather see for ourselves rather than risk letting a priceless pearl be hidden away in your files somewhere. At worst, we'll confirm your own ability to judge your stories; at best, we'll buy the story; and in most cases, we'll at least have a chance to let you know what's good and what's bad about it. Your job is to write; ours, to edit: but we can't edit unless you let us see what you've written.

—George Scithers

Dear Sirs:

I enjoyed the July 6th issue of *IA'sfm,* and wanted to say a few words to Avram Davidson about his article on dragons. First: on page 65, you quote the motto "Ars longa, vita breva." (As I recall, the tag is a translation from a Greek saying, supposedly of Hippocrates: "The art is long, but life is short," presumably referring to the art of medicine). Isn't the motto usually given as "Ars longa, vita brev*is*"?

Second: on page 76, and in your bibliography, you refer to "A.E. Wallis Budge". Unless my memory deceives me, the name is *E.A.* Wallis Budge.

Third: on page 80, you refer to a translation of Pindar's First Olympic Ode by "Richard Lattimate." Might you have meant Richmond Lattimore?

I am also surprised that you did not deal with that famous dragon of Job 41, Leviathan. "Out of his nostrils goeth smoke, as out of a seething pot or caldron. His breath kindleth coals, and a flame goeth out of his mouth," (Job 41:20-21). As well: "He maketh the deep to boil like a pot: he maketh the sea like a pot of ointment," (Job 41:31). The translators of the Revised Standard Version of the Bible think he may be the crocodile; my *Westminster Dictionary of the Bible* translates Leviathan as "one spirally wound." My limited knowledge of crocodiles does not suggest why they should be spirally wound, but spiral winding could be useful for a higher-stress creature like a dragon. It helps in belting tires for extra strength, and I could easily imagine a reptile like Leviathan needing the re-inforcement to manage the high temperatures and pressures of his insides.

Anyway, I look forward to seeing more such scholarly articles as "An Abundance of Dragons."

Adam Kasanof
New York NY

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Dear George:

Hmm, I am not sure that readers should be encouraged to correct writers; it tends to unsettle the natural order and basis of society, but Mr. Adam Kasanof is so very tactful that I suppose I may spare him a few paraseconds of my voluble time, argal—

(1) "Ars longa, vita breva" vs. *"Ars longa, vita brevis." I suppose some arses are longer than others; if "small Latin and less Greek" was good enough for Shakespeare, it's good enough for me.*

(2) A.E. Wallis Budge vs. *E.A. Wallis Budge. Someone has just tidied my study and I can't find my notebooks to check this. I can only say that* I *used to call him "Wally" and he left rings from his tea-cups all over my papyri.*

(3) Why I "did not deal with . . . Leviathan," well, the book of Job says, "God forbid that I should justify you. . . ." It also asks, "Canst thou draw out leviathan with an hook?" Well, no, I can't. *So* that's *why.*

(4) Lattimate vs. *Lattimore. Lattimate?* Lattimate? *It sounds like an obsolete adjective, as it might be "squamous, rugose, and lattimate." To think that my crisp calligraphy should have been thus abused; some printer's devil's head shall roll; see to it, Scithers.* [*By the way, (3) and (4) should be reversed. But who counts.*] *And if it doesn't roll, may he dwell like Job in the Land of Uz, alternately smitten with boils and Shittites.*

(5) "Anyway, I look forward to seeing more such scholarly articles as 'An Abundance of Dragons'." *There you are, Scithers. "The Reader Speaks," indeed.* Buy *some more. I just happen to have . . .*

Frantishly adieu,

Avram Davidson
Snoqualmie WA

Dear Mr. Scithers, et al,

To tell a story humorously is a talent some of us have and some of us don't, and that's just the way life is. But to impart facts humorously is a talent devoutly to be envied. And, boy, do I devoutly envy Longyear, Pournelle, Ezekial, and Wang.

Thanks to them—and to you, of course, for publishing them—I was, for the first time since I can remember, able to ride the rush-hour subway without feeling like a sardine. We all know, of course, that it is a gross breach of etiquette on public transportation to even show that one is alive, never mind in possession of one's sense of humor. Thus, as I giggled and guffawed my way through "Basic

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Genesis," I suddenly noticed that people were eyeing me askance and edging away from my vicinity. Which didn't faze me a bit. *IA'sfm* I know and love; and no strangers—or even friends—will ever come between us.

Pretty please, don't ever stop publishing this kind of thing; I can use the laughter (and the breathing space). Would that more of us had such a talent. It'd certainly make for a world easier to live in and with. Of course, in hopes of doing my small bit theretowards, I have (as I'm sure 99 and 44/100 percent of your other readers have and/or will) enclosed a short contribution. If it even begins to attain the high standards you have set and so lovingly maintained, I'll feel rewarded.

Sincerely,

Lucki M. Wilder
Chicago IL

P.S. Your "Requirements" packet is a fantastic "short course" on how NOT to drive Editors/Typesetters blind and/or crazy. Thanx!

"Basic Genesis" has received a great deal of acclaim, I am glad to say. It even helped push me *in the direction of a word-processor. My own is a TRS-80, Model II Microcomputer with a Scripsit program and a Daisy Wheel Printer II (if I've got all that right). I'm not going to argue quality with anyone, but this is what I've got, and this is what I'm going to stay with.*

—Isaac Asimov

Gentlemen:

I would like to give my opinion on the question of non-fiction in the magazine. Although the non-fiction is usually very informative, there are numerous science magazines on the market while there are very few science fiction magazines (and most of them publish non-fiction also). For this reason, I feel there is no need to publish non-fiction in your magazine.

I am also writing to request a description of your story needs and manuscript format. I have enclosed an SASE.

Sincerely,

Alan Steele
Hazel Green KY

You make a valid point; but in rebuttal, the articles we seek are those which deal specifically with matters closely related to common

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science fiction themes and which are too "far out" to interest the ordinary science magazines.

—Isaac Asimov

My Dear Good Doctor,

I've just started your 31 Aug. '81 issue of *IA'sfm*. The first thing I read was *Consternation & Empire,* even though I ALWAYS get an uneasy feeling that there *might* be a conflict of interest somewhere whenever reading ANY of Dr. J's work in your mag. (Yes, I know that George is the man who decides whether to throw it or show it, but then again, office politics have never been *that* straightforward!) But don't worry about my concern; I enjoy reading her stories.

The next thing I read was the *Letters* section. (Which is *usually* the first thing I read, unless something else catches my eye as I'm flipping towards the back. And, no, I never use the table of contents: that would be cheating!) Anyways, I read all the who-haw that there seemed to be about Poetry, and I'd like to add my voice to the din. For me, (notice that I said for me) poetry is simply writing designed to *primarily* convey a *feeling*. It doesn't have to tell a story, it doesn't have to rhyme, and its meter can be broken. Only the feeling matters.

Oh yes, please send me all of that stuff for aspiring authors.

Yours truly,

L. Melford Miller, Jr.
Colorado Springs, CO

You don't know George. He's rejected two of my last three submissions. And he has rejected a couple of the Pshrinks Anonymous stories, too. An editor who lets himself be influenced by anything but quality doesn't stay an editor long.

—Isaac Asimov

Dear Dr. Asimov,

I enjoyed the issues of your magazine that I have read . . . but, I have to say I was disappointed. For one thing, I was looking for some of *your* stories, which I did not find. Also, I remember reading in your introduction to Larry Niven's "Hole Man" in *The Hugo Winners* that the kind of SF that you most like to read and write was hard SF. I was hoping your magazine would reflect that more. Please try to have more hard SF stories in the future.

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Your Letters department is a major plus for your magazine. *Analog*'s "Brass Tacks" has become a little too esoteric for me. In your magazine the letters (and especially the answers) are fun to read. Keep up the great work.

Congratulations on your attempt to encourage new SF writers, but it looks like you have condemned the *IA'sfm*'s staff to many, many hours of reading manuscripts of hopeful writers. That includes me, too, so would you please send me your manuscript requirements etc. I am enclosing a SASE for this.

Thank you for reading my letter and please consider my suggestions about hard SF in your magazine.

Thankfully,

Christopher Gleason
Bowie MD

George has, on hand, an 11,000-word story by me, which may actually have appeared by the time your letter is published. [*See page 56! —GHS*] *So you see, it does happen occasionally.*

—Isaac Asimov

Dear Dr. Asimov:

Please thank your wife for *A Million Shades of Green*. I've been a fan of yours since *I, Robot,* and now J.O. Jeppson's won my admiration, too. (It must be glorious to live in such a stimulating household!)

Just so you'll know how I love green . . . having lived most of my life in Chicago, ten years ago my late husband and I bought 300 acres of paradise here in Wisconsin. Last weekend, having just finished reading "Green," I went with my fiance on a four-hour drive to visit friends, mostly through farm country. I savored every single shade as I would never have done before. Even the Martian would have been sated with the marvelous patchwork of corn, bean, oat and potato fields edged by lines of pine, oak, willow . . . absolutely delicious! Thank you, J.O. for the enhancement of my sight.

I've been waiting for one of your correspondents to compliment you on your new cover graphics. Since it's been more than six months and no one has—I will. The new look is very clean and inviting.

Thank you.

Ruth Way
Rt. 2 Box 94
Almond WI 54909

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Well, thank you. I, as a thoroughly non-visual person, am constantly being educated by the very visual J.O. to my great benefit. I admit it's a stimulating household; but between the constant clatter of typewriters and our desperate attempts to keep up with our respective scientific specialties, we long for some good loud silence and some strenuous activity now and then.

—Isaac Asimov

Dear George, and Isaac:

I have written in the past to say nice things about *IA'sfm,* but I'm afraid this time I have a couple negative comments. They are meant constructively, and I shall be gentle.

First, I'm afraid I don't care for J.O. Jeppson's stories. (I've been watching the letters column for similar reactions, but have seen none. Perhaps people are afraid of offending you, Isaac. Or perhaps I'm in a minority, as I was in disliking the Momus series.) I find the stories too talky, and the premises thin and dry. I am also much put off by all the cutesy psychiatric in-jokes. I have a psych degree, so I am not in the dark, but some of them must be pretty opaque to a person with no psych background. I would like to see Janet write some other stories. (Believe me, no offense intended. If I've learned one thing as a writer myself, it's the need for criticism given honestly, and without malice.)

Second, could you do something about the lag time on film reviews? By the time your magazine comes out, I've already seen it or decided not to. In fact, it's probably not even in town anymore. (The film, I mean.)

Let me end on a strange but positive note: thank you, George, for your rejections. I would prefer acceptances, of course, but your rejections are always accurate, constructive, and *encouraging.* I appreciate the respect my submission receives. And several pieces, some of which were inspired by *IA'sfm,* have been successfully placed elsewhere. (In fact, three of my first fiction sales were based on bad puns. All because of you, Isaac!)

Anyway, they're small complaints amid a great deal of satisfaction. Keep it up!

Sincerely,

Shari Prange
324 Blue Ridge Drive
Boulder Creek CA 95006

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No, there are indeed some who don't entirely approve of Janet's stories. Heck, there are some (believe it or not) who don't entirely approve of my *stories. I have no objection to printing such knocks—even though I don't actually* enjoy *them.*

—Isaac Asimov

Dear Dr. Asimov,

Please continue to express your opinions as forcefully as ever. Your editorial ("Taking a Stand") in the August 31 issue states that some people have been so outraged by stands you have taken that they, in retaliation, cancelled their subscriptions to *Isaac Asimov's Science Fiction Magazine*. Never fear. Your magazine will continue to prosper. In fact, *IA'sfm* is so good that you can be sure that most of those who cancelled their subscriptions are now buying the magazine at their newsstands.

But one thing about your August 31 editorial bothers me. You describe yourself as a feminist. In one small—but important—way, you don't fully live up to that label. It's not that you're a man (I'm a male feminist, myself), but your language shows traces of discrimination. Part of your definition of a "humanist" ("He looks no further for the motivation or the rationale of his beliefs and behavior than his acceptance of the prime importance of the human being . . .") excludes women, and your statement about how "hard-headed practical men" would describe you seems to suggest either that you do not know of any hard-headed practical women or that, unlike the men, women would not dismiss you as "a fuzzy-minded do-gooder." (I must admit that your well-known sex appeal makes the latter hypothesis quite plausible.)

This is more than trivial nit-picking. Because so much of our thinking is done with words, we must be sure there are no hidden assumptions in our words that might prejudice us (or our readers).

The English language, in normal usage, often leads us to assume that any characters being discussed are male unless the author has made a point of specifying otherwise. Frequently (as in your editorial, for example) such sexism in the language is merely a minor annoyance; the author's ideas are not obscured. Sometimes, however, such language can have a more profound effect—especially in science fiction stories.

SF writers are free to describe an infinite variety of future societies and alien cultures. We must not let our language limit our vision of the future.

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Sincerely,

David Randal Stone
607 Case Place, Apt. 30
Evanston IL 60202

It is not easy to force the English language into a non-sexist stance, without doing it harm. You can't forever be saying "he and/or she" or "she and/or he" or "her or him." You can't too often substitute "it" or "they" or "one." Sometimes you simply have to fall back on the fact that "man" can be used as a general term including "woman" and "he" as similarly including "she." I don't say all *the time, but* sometimes.

—Isaac Asimov

Dear Isaac and George:

I have been a subscriber to your magazine for over a year now, and I have enjoyed every issue. I especially like the book column. Whenever I get my new issue I immediately read the column to see which authors are putting out new books. In August's issue my favorite article was the one about the word processor, for I have found that I like your articles that are written through a joint effort. I only have one question about your magazine—do you ever edit the letters you print?

Your fan,

Miss Gail Christeson
12105 Mt. Pleasant Drive
Laurel, MD 20708

We might publish only a portion of a letter, but the portion we print is unedited in the sense that we don't change any words, but publish exactly what the writer said.

—Isaac Asimov

Dear Dr. Asimov,

I have enjoyed your magazine immensely since I was introduced to it by a reliable fellow SF fan. She loaned me all her back issues, so I haven't missed many.

Congratulations for recognizing the importance of poetry in SF! Please send me your format rules for poetry and prose—I would like to try my hand.

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I have one other request: although I have been reading SF almost all my life (15 years), I frequently find inside references and jokes in *IA'sfm,* mostly in the Editorial and Book Review sections. I have obviously missed reading many of the basic, classic stories and authors. Would you print a list of recommended classic SF, sort of an "introduction to the field"? I am sure it would be appreciated by the ranks of newcomers who really don't know where to start.

Hopefully yours,

Janie Helser
1114 Sumner St.
Wheaton, IL 60187

There are *such lists; notably in* Teaching Science Fiction *(Owlswick Press) and* A Reader's Guide to Science Fiction *(Avon Books).*
—Isaac Asimov

NEXT ISSUE

In the March 15, 1982 issue of *IA'sfm* we'll once again be presenting a Silverbergian tale of Majipoor, the huge and wonderous planet on which *Lord Valentine's Castle* was set. We'll also have another Adventure in Unhistory by our resident professor of Unhistory, Avram Davidson. There's also a short story by Nebula award-winner Charles L. Grant, the first ever by him to grace these pages, as well as a puzzle by Martin Gardner, an editorial by the Good Doctor, and much more. On sale February 16, 1982.

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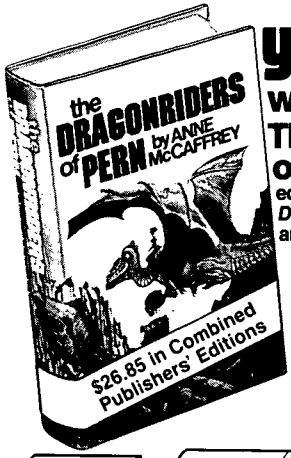

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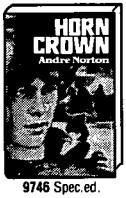

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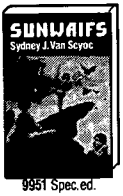

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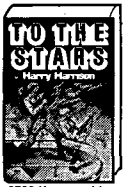

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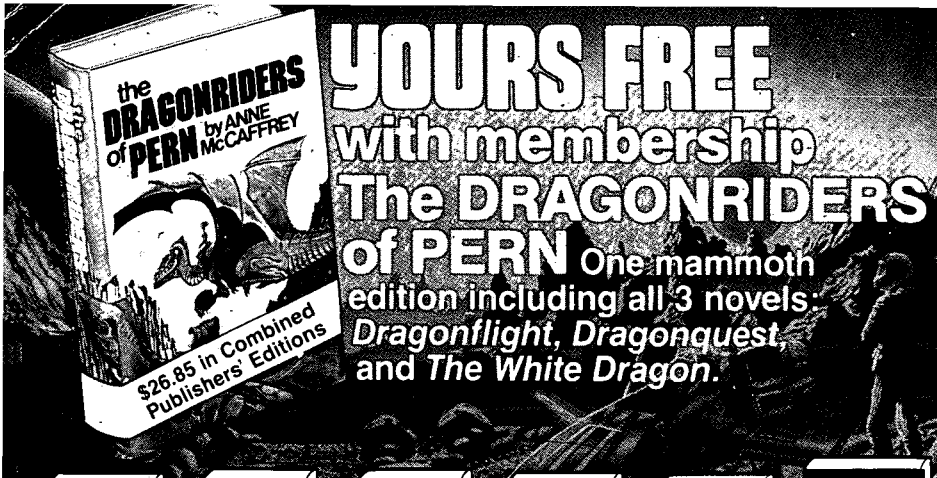

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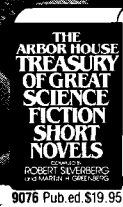

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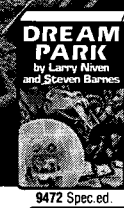

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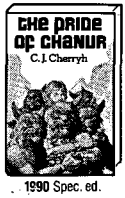

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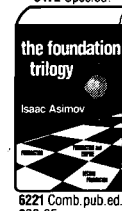

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